

THE 1998

GOLD
BOOK

ANNUAL

by Frank Veneroso

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A C K N O W L E D G M E N T S

Writing so extensive a document as The Gold Book Annual amidst the black sentiment of the current gold market was a task worthy of Sisyphus. I owe a debt of gratitude to many colleagues for encouragement in rolling the boulder up the hill.

Jim Blanchard of Jefferson Financial first proposed The Gold Book Annual. He and Brien Lundin provided ongoing design and editorial support. Their staff, in particular Beth Capritto, provided us with additional administrative help. Our thanks for their vision and composure. We hope it will be rewarded tenfold.

John Brimelow is one of the two contributors to Veneroso Associates Weekly Gold Watch Service. He provides the day-to-day flow of information that grounds all of the analysis of Veneroso Associates Precious Metals Services to the real world of gold supply and demand. His ongoing information and analysis have supported this entire effort. His abiding patience and good judgment is appreciated beyond words.

Elizabeth Beveridge runs the day-to-day operations of Veneroso Associates Precious Metals Services. She has been responsible for turning Frank Veneroso's ongoing analytical efforts into the present document. She has provided excellent administrative and word processing support for this project.

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Marshall Auerback, who is director of our fund management efforts, read and commented on the drafts as they evolved over these many months.

T H E 1 9 9 8 G O L D B O O K A N N U A L

A N O T E O N T H E

A N A L Y T I C A L F R A M E W O R K

The Gold Book Annual is intended as an annual publication that will consolidate every year all of the information available that is relevant to the working of the gold market. It has been the view of both myself and James Blanchard III that the gold market has long needed such a publication. There are several organizations that provide statistical information on the gold market. There are also occasional analytical studies of the market. Lastly, information on the institutional structure of the market and its day-to-day workings is highly fragmented throughout press reports, publications by brokers and dealers, and the financial and industry press. In our view, the gold market has needed one publication that tries to assemble in a rational framework all this available information.

The Gold Book Annual attempts to pull all this information together in a coherent framework aimed at forecasting the future status of the gold market. The framework we have adopted is the “classical” approach in the field of mineral economics employed to make long-run forecasts of the relative price of any commodity. I had the good fortune to participate in a major exercise along these lines in the mid-1980s. Then, the giant Escondida copper project – now the largest copper project in the world – was under consideration. The partners in the project – BHP, RTZ, IFC and Mitsubishi – wanted a long term

copper price forecast to establish the economic viability of this massive project. They assembled a formidable team: Charles Rivers Associates, Met Research (a spin-off of Chase Econometrics), RTZ's in-house mineral economy department under Phillip Crawson, the World Bank's own long term copper analytical work, and Marion Radetsky of the University of Stockholm, arguably the leading copper economist in the world at the time. This group brought to bear on this analysis all the known analytical tools used in applying microeconomics to the job of projecting supply, demand and price in any mineral commodity. To begin with, the analytical framework worked out in this extensive exercise is used to conceptually structure The Gold Book Annual.

The gold market is an investment market as well as a commodity market. In the current environment, with little Western investment interest in the metal, it is the commodity dynamics of the market that now dominate. This may not always be the case. This first issue of The Gold Book Annual focuses on one specific investment issue – the behavior of official sector holders of gold. We expect that, in future annual editions, other investment issues will come to the forefront. This will pose the challenge of developing a yet more complex conceptual framework for The Gold Book Annual that fully integrates the commodity and investment aspects of the gold market.

T A B L E O F C O N T E N T S

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I N T R O D U C T I O N

At the time of the completion of this book, the gold market is in a state that verges on “*psychological catastrophe*.”¹ Never has there been such pervasive and such profound pessimism, such panic by producers and smaller central banks, such confidence by a whirlwind of short sellers, and such unbridled glee among a market’s chorus of bears.

This all-pervasive and profound bearishness stems above all from one prospect: The world’s central banks will sell all their gold. Every day, the financial media reminds their viewers that the central banks hold tens of thousands of tonnes of gold and warn them that they eventually may sell all of it. Statements by Eddy George, Governor of the Bank of England, and Dale Henderson, a staff director of the U.S. Fed, have disparaged gold as a reserve asset.² The prospect of a never-ending crushing supply of official gold now terrifies all the bullish advocates of gold and makes the bears supremely confident.

This, in essence, was the sorry state of the gold market.

In the past year, a new paradigm has swept the gold market. A decade or two ago the gold price was explained in terms of portfolio dynamics; investment demand for gold and hence its price reflected gold’s relative risk adjusted rate of return based on U.S. interest rates, the U.S. dollar exchange rate, U.S. inflation and proxies for global political risk.³

No longer do market participants try to understand the gold market in terms of such traditional investment determinants: inflation, the dollar exchange rate, political shocks, or the like. Now the market regards the outlook for gold as a function of supply/demand forces, and one supply force above all stands out: the flow of central bank gold.

In the past year, a new paradigm has swept the gold market. A decade or two ago the gold price was explained in terms of portfolio dynamics.

Now the market regards the outlook for gold as a function of supply/demand forces, and one supply force above all stands out: the flow of central bank gold.

1 Bundesbank Council member Johann Wilhelm Gaddum has commented recently that “Even discussing (German gold sales) would be a psychological catastrophe.” (Bloomberg, Frankfurt, Nov. 11, 1997.) In fact, the swirling controversy about the role of gold in the future European Central Bank has already brought the gold market to the verge of “psychological catastrophe.”

2 Mr. Henderson, representing the United States at the 1997 Central Banking Conference in London, stated that, “anything which tends to perpetuate gold’s role in the monetary system is probably a mistake.” Bank of England Governor Eddy George threw fuel on the fire by remarking that, “whereas gold used to be seen as (a good asset), it’s now seen as the bottom of the pile.”

3 See “Gold: Investment Theory and Application,” Eugene J. Sherman, Prentice Hall, 1986.

Other supply/demand forces, if they are bearish, garner attention as well. Most recently, the Asian currency and financial crises have been focused on as adverse shocks to demand. The era of superior economic growth in that bastion of gold demand – Far East Asia – has allegedly ended forever, thereby crippling physical market support for gold.

It is because of this radical change in the paradigm employed by gold market participants that we have devoted the first edition of The Gold Book Annual to the supply/demand fundamentals for gold. This does not imply that there are no investment issues that are important for the gold market. There are such issues, and in years to come they may move to the forefront; once again Western investment considerations may eclipse “commodity” supply/demand issues, as they did through most of history when gold was money and as they did in the 1970s when gold was a preferred inflation hedge.

One does not have to look far forward to see sources of renewed investment demand for gold. Banking crises throughout all of Asia will inevitably require policies of reflation. The Asian currency crisis appears to have shocked Japanese policy makers into bolder action; the Japanese monetary base is expanding at a double-digit rate, and a huge government support package is being prepared to bail out Japan’s banks. The Europeans, with their intolerably high levels of unutilized resources, may eventually opt for reflation. With a large net debt and a current account deficit that is set to reach record levels, the next bout of currency depreciation in today’s manic markets may engulf the U.S. dollar. Lastly, the U.S. stock market is 20% to 50% more overvalued than it has ever been. Never has the American public been so heavily involved in U.S. equities. When the U.S. stock market bubble bursts, as inevitably it must, an American public with no tolerance for economic pain will demand policies of reflation.

Still, at the current juncture, gold supply/demand is the issue of the day. Investment issues may well come to the forefront by next year; at which point they may then become the focus of the second Gold Book Annual.

For now, the gold market is functioning much like a commodity market; a huge supply of metal from the liquidation of a vast, above-

It is because of this radical change in the paradigm employed by gold market participants that we have devoted the first edition of The Gold Book Annual to the supply/demand fundamentals for gold.

ground stock is straining the absorptive capacity of the market's principal commodity use – jewelry. A good parallel is the palladium market, where a vast Russian hoard of the metal accumulated through decades of Soviet rule had been under liquidation in recent years, providing the market with 40% of its aggregate supplies and deeply depressing the palladium price – until the Russian supplies diminished in early 1997 and the palladium price exploded. It is these supply/demand dynamics that require understanding in the current period of siege in the gold market.

The gold market's understanding of such supply/demand conditions and dynamics is based almost entirely upon the work of one organization – Gold Fields Mineral Services (GFMS), a London-based research operation that has been compiling gold supply/demand statistics since the late 1960s. It is our opinion that there are two very serious deficiencies in this widely accepted “Bible” of the industry which are fostering important misconceptions in the gold market and thereby exacerbating the reigning bearish sentiment in the industry.

First, there exists a plethora of evidence that Gold Fields' statistical portrayal of the gold industry is seriously flawed. Second and more importantly, Gold Fields does not take it upon itself to provide the market with an analytical framework for understanding the supply/demand dynamics of the gold market. Without such intellectual leadership, the gold market has been swept by *alleged* facts, claims and prognostications from its most bearish voices. It is our opinion that these widely voiced views do not bear up under scrutiny and have greatly contributed to the dark sentiments and the avalanche of selling that dominate the gold market today.

The current profound and pervasive pessimism in the gold market often appears to us to be the obverse of the rampant bullishness that marked the peak in the gold price 18 years ago. Then, as with any market that has been in a long and accelerating trend, opinion was one-sided: inflation would escalate forever; gold was the only asset to hold amidst widening geopolitical turmoil; the dollar would sink from sight. All manner of speculators and investors, even the central banks, bought into the consensus and were purchasing gold.

For now, the gold market is functioning much like a commodity market; a huge supply of metal from the liquidation of a vast, above-ground stock is straining the absorptive capacity of the market's principal commodity use – jewelry.

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Almost always at such extremes, the accepted wisdom proves in time to have been very wrong. At such times, cold dispassionate analysis is needed to gain balance and perspective. This is the principal objective of the first edition of The Gold Book Annual.

This year's edition of The Gold Book Annual tries to accomplish three basic goals:

- *Estimate the true levels of supply and demand in the gold market.*
- *Explain the way the gold price responds to changes in these relevant supply/demand variables.*
- *Project future supply/demand conditions and their implications for the future price of gold.*

The first part of this document focuses on the questions: "How great is the supply/demand deficit in the gold market and how high would the gold price rise if there is an abatement in the flow of official gold?"

The answer is quite simple: The deficit is greater than anyone currently thinks, and the price of gold that would clear the market in the absence of official supplies is higher than anyone believes.

Almost always at such extremes, the accepted wisdom proves in time to have been very wrong. At such times, cold dispassionate analysis which extends its purview from the immediate present to the past is needed to gain balance and perspective. Providing this counter to the current chorus of bearish commentary is the principal objective of the first edition of The Gold Book Annual.

This year's edition of The Gold Book Annual tries to accomplish three basic goals:

Identify supply/demand variables whose values are erroneously estimated and widely misunderstood, and estimate the true levels of supply and demand in the gold market.

Understand and explain the short run dynamics that govern the way the gold price responds to changes in these relevant supply/demand variables.

Understand the long run trends in the gold market that project future supply/demand conditions and explore their implications for the future price of gold.

Part I of this book provides the tools for analyzing the short run in the gold market. Chapter One through Chapter Three of this book deal with the first of these issues: the true levels of gold market supply and demand. Chapter Four and Chapter Five focus on the second of these issues: the price dynamics that govern the gold price over the short run. Together, these five chapters comprise the first part of this book. It asks the questions, "How great is the supply/demand deficit in the gold market and how high would the gold price rise if there is an abatement in the flow of official gold that is now depressing the gold price?"

The answer is quite simple: The supply/demand deficit in the gold market is greater than anyone currently thinks, and the price of gold that would clear the market in the absence of today's official supplies is higher than virtually anyone believes.

Part II creates the framework for projecting the gold market's supply/demand framework into the future. Chapter Six and Chapter

Seven focus on long run trends in demand, and Chapter Eight considers long run future trends in mine supply.

Making long run projections for the gold market must take into account future flows of official sector gold as well as gold's commodity supply/demand conditions. Part III of this book incorporates this final element into long run projections of the gold market. Chapter Nine and Chapter Ten examine official sector behavior toward gold and the determinants of this behavior. In the final chapter, we simulate future scenarios for the gold market. The conclusion of this final part is surprisingly bullish: The depletion of official supplies is likely to occur in fewer years than anyone expects, and sometime in the next decade supply/demand dynamics will take the nominal dollar gold price to new all-time highs.

Amidst the prevailing gloom in the gold market, these conclusions are shockingly bullish. We want to stress two things: First, our analysis need not have bullish implications for the short run; and second, our conclusions have been arrived at through a dispassionate analysis.

Amidst the deeply depressed sentiment in the gold market today, and with such ample official stocks of gold available to be lent or sold, extremely weighty supplies of official gold can be brought to bear on the gold market for a period of time. Such supplies, if they are sustained, can keep the gold price deeply depressed for some time. To a great degree, such short run developments lie with the central banks themselves: If they choose to sell gold intensely, lend gold freely and foster the prevailing pessimism in the market, they will depreciate the current value of the bullion they hold in the short run, even if it is inevitable that, after a period of years, it will command a much higher price.

Although the long run implications of this analysis are very positive for gold, the analysis in *The Gold Book Annual* is not driven by the rigid adherence, the unwavering advocacy, or the almost ideological passion of "gold bugs." Rather it comes from subjecting the gold market to the type of microeconomic analysis that is generally employed by commodity analysts trying to forecast the long-run real (inflation-adjusted) price of any commodity. As a result, though its long-run

The second and third parts look to the long run. They conclude that the depletion of official stocks of physical gold will occur in fewer years than anyone expects, and sometime in the next decade supply/demand dynamics will take the gold price to all-time new highs.

Our analysis need not have bullish implications for the short run. If central banks sell gold intensely and lend gold freely, they will depreciate the current value of the bullion they hold in the short run, even if it is inevitable that, after a period of years, it will command a much higher price.

conclusions may be exciting to many with an interest in gold, its analysis will seem tedious and boring.

Because this first edition of *The Gold Book Annual* takes serious issue with the most widely accepted statistical accounts of the gold market, it has been necessary to provide very considerable analysis of statistical detail. Unfortunately for both ourselves and the reader, such statistical analysis is frightfully boring. Also, this type of microeconomic analysis of a commodity market is very technical. We have tried to shun excessive use of the technical jargon of economists; we know that, for most people interested in the gold market, such jargon tends to be bewildering and forbidding. But as there are economies to be gained from employing this technical jargon, our decision to avoid it to some degree has led to a document that is unfortunately too discursive. Be that as it may, we want to stress that the exercise in *The Gold Book Annual* represents our most dispassionate analysis of the structure and commodity dynamics that govern the gold market and that will determine its long run price outcome.

Because of our apprehension about the reader's patience with hundreds of pages of technical material, it seems to us advisable to review at this early juncture the basic conclusions of our analysis on a chapter by chapter basis. Hopefully, this will provide a road map that will guide the reader. By providing in summary the conclusions of our research at every stage, this road map should capture what in essence is a very intriguing story. This book's final conclusions tend to be quite surprising, and they should provide the reader with encouragement to forge onward.

Chapter One, *The Supply/Demand Framework*, establishes the case that global gold demand far exceeds consensus estimates. Such a higher level of demand implies a deficit in the gold market that far exceeds prevailing estimates. Gold is flowing from the central banks at a far higher rate than anyone now believes – a rate which many would agree is not sustainable.

Chapter Two, *The Incredible World Of Gold Borrowings*, argues that most of this unreported flow is borrowed gold. Outstanding gold loans are more than two times consensus estimates. These unappreciated flows of borrowed gold constitute the “hidden” supplies that correspond to

Italicized liner notes in the margin of the text guide the reader. The following are the high points of this first issue of The Gold Book Annual.

Chapter One: Global gold demand far exceeds consensus estimates. Gold is flowing from the central banks at a far higher rate than anyone now believes.

the underestimated demands discovered in Chapter One. Most of these gold borrowings can be construed as short sales of some form or another. If they continue to grow, they will represent a source of gold market instability at some point in the future.

Going on to Chapter Three, *Reconstructing Gold Supply/Demand 1993-1997*, our strongly dissenting views on the values of the basic supply/demand variables in the gold market will surely generate much controversy. Most of it is likely to range from strident opposition to disparagement to outright dismissal. For this reason, we have felt obliged to strongly support our case. This chapter demonstrates how these new supply/demand estimates are consistent with so much else we know about the gold market. This chapter serves at the same time another purpose: It describes in detail several aspects of the gold market – the vast OTC market, the shadowy gold option market, and the role of the “funds” – that mystify many people interested in the gold market.

In Chapter Four, *Inventory Tides And The Option Hammer*, we move toward the issue of gold price dynamics. It is widely believed that gold demand is extremely sensitive to changes in the gold price, so that a sharp or even complete abatement in official supplies will have only a moderate impact on the gold price. Chapter Four analyzes these short run price sensitivities and argues that most of them are of a transitory nature.

The title of Chapter Five poses the question, *Where Would The Gold Price Be If The Flow Of Official Gold Were To Cease?* In our “model” of gold’s supply/demand dynamics, when official supplies cease the burden of adjustment to a new price equilibrium is borne primarily by price elastic demand rather than price inelastic mine supply. We conclude that, were all official flows of gold to cease today, after some lag the gold market would clear at a price of \$600 an ounce.

In Chapter Six, *The Strong Secular Trend In Gold Consumption*, we move toward the future. We show that, over the past 25 years, growth in global gold demand, excluding both official and western investment demands, has been more than 5% per annum whenever the price of gold has been constant in real (inflation-adjusted) terms. This is truly

Chapter Two: Most of this flow is borrowed gold. Outstanding gold loans are more than two times consensus estimates.

Chapter Five: Were all official flows of gold to cease today, after some lag the gold market would clear at a price of \$600 an ounce.

Chapter Six: Growth in global gold demand has been 5% per annum whenever the price of gold has been constant in real terms. This trend growth rate exceeds the trend growth rate of any other major commodity.

Chapter Seven concludes that the Asian crisis is a transitory event. Emerging Asia's strong long-term macroeconomic fundamentals will re-establish superior economic growth and sustained high growth in global gold demand. As regards recent dollar strength, the U.S. balance of payments may deteriorate to a greater degree than it did after the "dollar bubble" of 1984-1985. It will eventually undergo a drastic decline, much as it did in the mid-1980s.

Chapter Eight: The historical record shows the trend rate of gold mine supply is likely to be two percentage points below that of gold demand. If the real price of gold remains constant, the deficit in the gold market will widen rapidly as the years pass.

In Chapter Nine we see why many central banks view gold negatively. Nonetheless, some of the recent undisclosed official sales are EMU-related, and they should abate or cease in the coming year.

extraordinary, for it constitutes a trend growth rate that amply exceeds global GDP growth and the trend growth rate of any other major commodity.

Chapter Seven, *Dealing With The Disequilibria Of 1997*, has two objectives. First, it asks, "Will the strong trend growth in global gold demand persist in the future?" This strong trend rested in part on very rapid economic growth in the emerging Asian countries with their characteristically high intensity of gold consumption. This chapter concludes that the Asian crisis is a transitory event created by exposure to excessively volatile, short-term, external capital flows. Emerging Asia's strong long-term macroeconomic fundamentals will re-establish superior economic growth in the region and sustained high growth in global gold demand. This chapter also considers the negative impact on gold demand arising from the very strong dollar in 1997. It concludes that, as a result of recent dollar strength, the U.S. balance of payments may deteriorate to a greater degree than it did after the "dollar bubble" of 1984-1985 and that it will eventually undergo a drastic decline, much as it did in the mid-1980s.

Chapter Eight, *Future Gold Supply/Demand Balances And Their Implications For The Gold Price*, deals with the long-term future trend of mine and scrap supply. Again, the historical record shows that, even at the much higher gold prices of recent years, the trend rate of gold mine supply is likely to be two percentage points below that of gold demand. If the real (inflation-adjusted) price of gold remains constant, the deficit in the gold market, which was zero only 10 years ago and is extremely large today, will widen progressively and rapidly as the years pass.

In Chapter Nine, *Past Patterns And Future Prospects For Official Gold Sales*, we review the attitudes of the central banks regarding gold. There is much here that is not positive. Many central banks view gold negatively as a barren asset devoid of any return. However, it appears likely that recent undisclosed official sales have been of European origin, are European Monetary Union (EMU)-related, and they should abate or cease in the coming year.

Chapter Ten, *The Positive Real Return To Gold*, considers the key issue of gold's inherent long run rate of return. It shows that gold's "commodity" market based real return has been extremely high in recent decades. The microeconomic basis for this high real rate of return lies in the persistent tendency for gold demand to exceed mine supply. It shows that, excluding changes in monetary demands for gold, this tendency has persisted over almost two centuries of reconstructed gold market data. Central bankers and the "shorts" in the gold market believe incorrectly that gold is barren only because their expectations are based on the bear market of recent years and not on a longer term perspective. This longer term perspective should encompass not only the recent bear market years but the bull market of the 1970s – a bull market which was unprecedented in magnitude for virtually any major asset class.

In Chapter Eleven, *End Games*, we bring to bear all of the analysis of this first issue of The Gold Book Annual and simulate future supply/demand balances and future gold price scenarios. These simulations show that, under a persistent low \$320s price scenario, today's large gold market deficit expands at a rate sufficient to exhaust central bank coffers of physical metal within a decade, at which point the gold price must explode above a price equilibrium that exceeds \$1,000 per ounce.

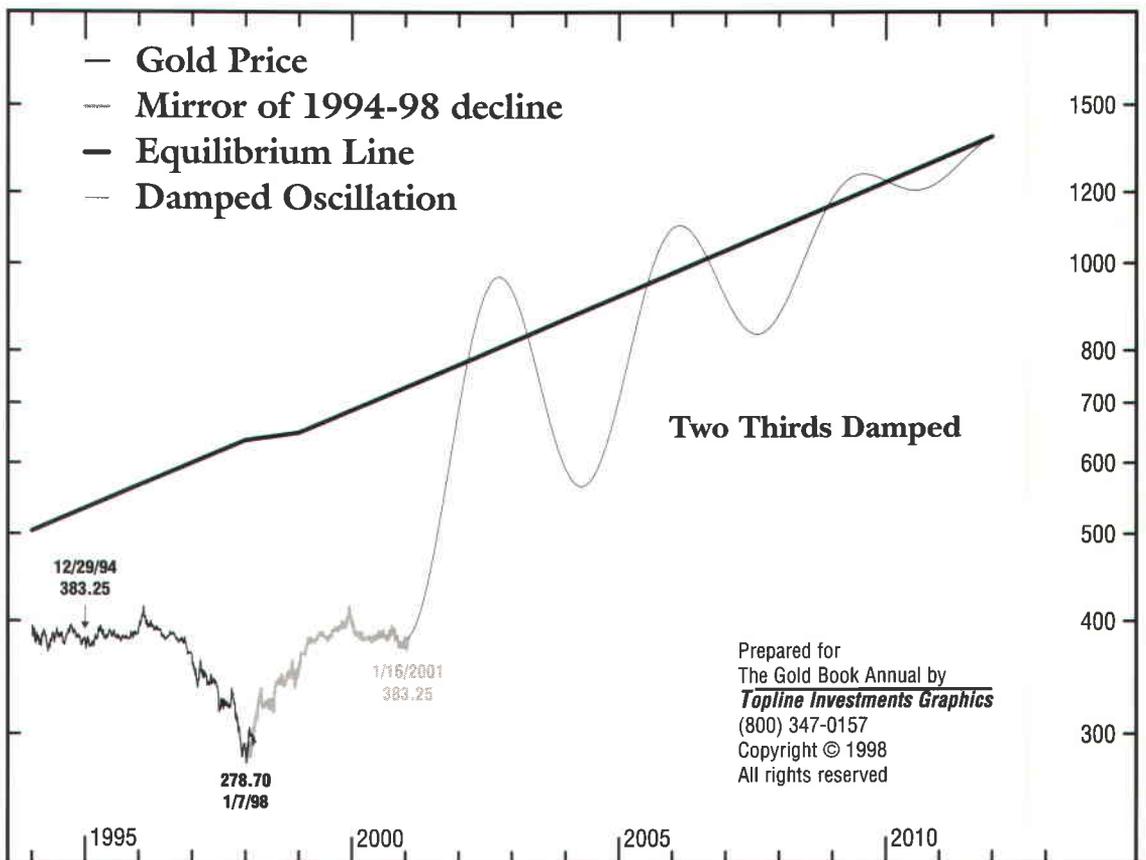
Of course, the odds are that, long before this extreme end game is allowed to play out, today's bearish central bankers and short sellers will become aware of such a possible outcome from the gold market's supply/demand dynamics. This should modify their behavior, leading to an earlier abatement in official supplies; this, in turn, will unleash an earlier rise to gold's far-higher price equilibrium.

In all such cases, when a market which has been far removed from its long run equilibrium returns to this equilibrium, it overshoots it and by a large margin. The existence of a large short position in the gold market should amplify such an eventual overshooting. To get a flavor of the ultimate message of this year's The Gold Book Annual, we present the gold price path generated by one of these less extreme gold market simulations.

Chapter Ten: Gold's commodity market based real return has been extremely high. The microeconomic basis for this high real rate of return lies in the persistent tendency for gold demand to exceed mine supply. This tendency has persisted over almost two centuries of reconstructed gold market data. Central bankers and the "shorts" in the gold market believe incorrectly that gold is barren only because their expectations are based on the bear market of recent years and not on a longer term perspective.

Chapter Eleven: Under a persistent low \$320s price scenario, today's large gold market deficit expands at a rate sufficient to exhaust central bank coffers of physical metal within a decade, at which point the gold price must explode above a price equilibrium that will then exceed \$1,000 per ounce.

Long before this extreme end game is allowed to play out, today's bearish central bankers and short sellers will become aware of such a possible outcome. This should modify their behavior, leading to an earlier abatement in official supplies; this, in turn will unleash an earlier rise to gold's far higher price equilibrium.



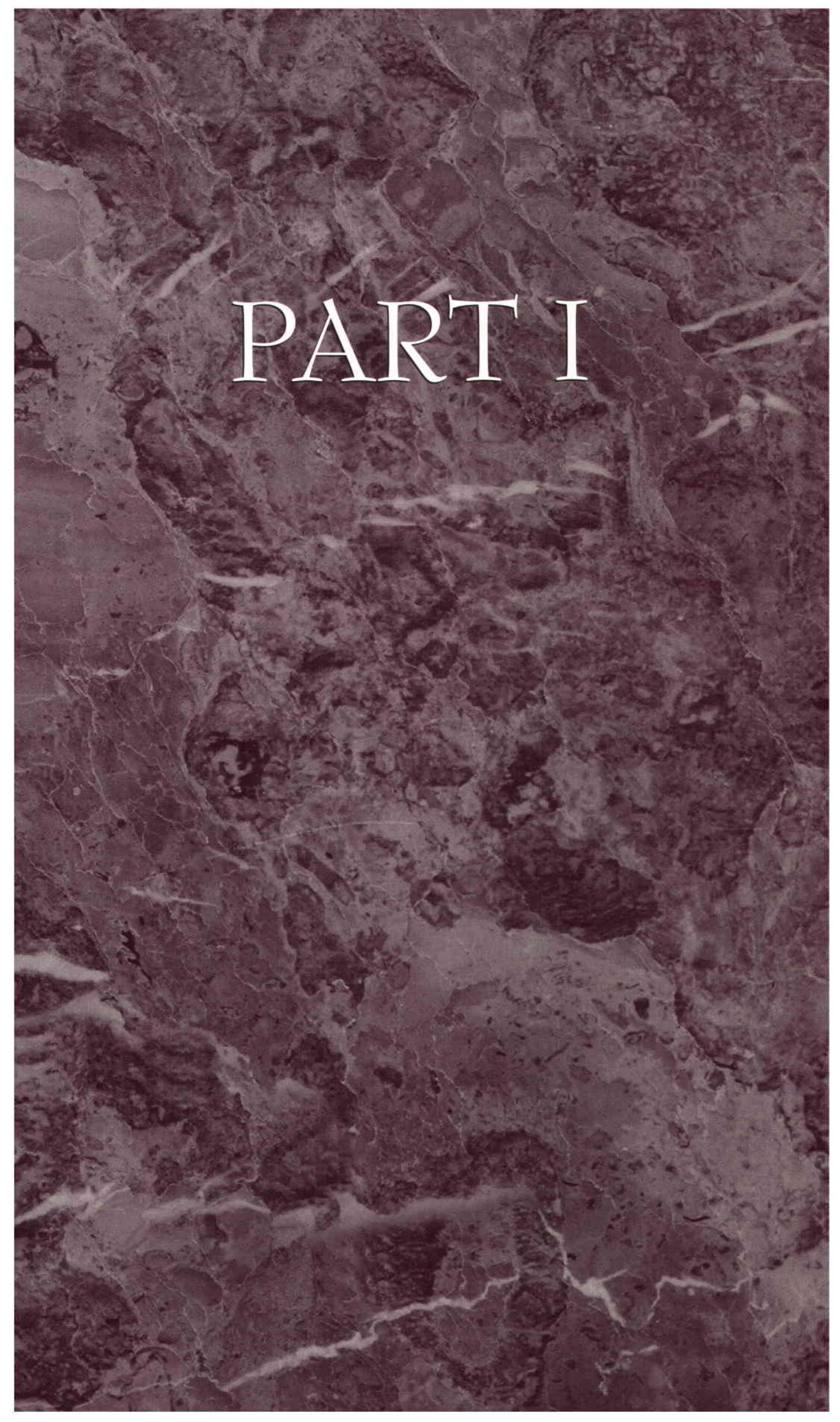
Faced with the rather daunting task of rendering readable a document replete with statistical dross and technical detail, we have provided the reader with a running summary in the form of italicized liner notes in the wide margin of the main text. We recommend that readers scan these liner notes before delving directly into any chapter.

Unfortunately, to lay a sound basis for our ultimate arguments and conclusions, the early chapters of this book are replete with wearisome statistical and technical material. The exciting implications of our analysis do not first surface until Chapter Five. And it is only after all of our case has been prepared that our ultimate, quite bullish message is presented in Chapters Ten and Eleven. *We strongly urge the reader to first scan the liner notes of Chapters Five, Ten and Eleven before wading into our full text.* In doing so, one will read a message that may be of great enough interest to inspire a full reading of the tedious statistical and analytical detail of the body of the text.

We have also relegated a great deal of detail to a set of appendices. The first two appendices are devoted to detailed elaborations and support for the major statistical issues dealt with in the main text.

These are included for persons who have an interest in our controversial assessments on gold supply and demand and the dynamics of the gold market. We would expect that only a few professionals will find it worthwhile to review these statistical appendices. They are there above all for skeptics and critics, and hopefully for professional organizations in the world of gold which have a serious interest in getting the facts of the gold market right. We expect our ongoing research will provide important new information on this subject in successive editions of *The Gold Book Annual*.

The last appendix, *A Long-Run Perspective On Asia*, has been written to support our positive conclusions regarding the outlook for emerging Asia. Amidst the current crisis, we are aware that our positive views are very controversial. This lengthy essay sets out our views in great detail. These views reflect two decades of experience with financial crises in emerging economies and a long collaboration with one of the world's experts on emerging Asia, Professor Robert Wade of Brown University. This appendix should prove worthwhile to any reader with a strong interest in the Asian currency crisis. ♦

The background of the page is a classic marbled paper pattern. It features a complex, organic design with swirling, vein-like patterns in various shades of brown, from light tan and beige to deep, dark chocolate and near-black tones. The overall effect is a rich, textured, and somewhat chaotic visual field.

PART I



CHAPTER 1

THE SUPPLY / DEMAND FRAMEWORK

Gold is a commodity in a deep supply/demand deficit. Eventually the supplies of central bank gold that depress the gold market will abate. Then, the gold price will rise. How long it will take for these supplies to abate and how far the gold price will rise once the supplies do abate are direct functions of the size of the deficit in the gold market.

The following chapter establishes the supply/demand framework for the gold market and the size of the market's supply/demand disequilibrium. It is a chapter that deals in detail with gold market statistics. We understand that such analyses and debates about statistics are fundamentally a boring affair. So, for the trusting reader, the italicized liner notes in the wide margin summarize the basic points required for understanding the remainder of this treatise.

For the curious reader, the text of this chapter should suffice and, finally, for the more critical reader, we have added three appendices to this chapter that support our basic thesis.

COMMODITY VS. INVESTMENT PARADIGMS

Gold is a commodity in a deep disequilibrium. The level of sustainable demand far exceeds the level of sustainable supply.

For all commodities, such disequilibria are possible because of the liquidation of above ground stocks. For most commodities, these above ground stocks are the inventories held by economic agents involved in the production, distribution, and use of the commodity. These inventories tend to be quite limited; therefore, the departure of sustainable demands from sustainable supplies is quite limited both in magnitude and over time.

Because gold is an asset as well as a commodity of use, the above ground stock is extremely large relative to sustainable commodity demand and supply. In the current period, the gold market has been overwhelmed by a very large rate of drawdown of the central bank stock of gold. This has created a gap between sustainable supply and demand that is unusually large relative to other commodities in disequilibrium. It also implies that, when these especially large official flows cease, an unusually large increase in the gold price may be needed to bring supply and demand into balance or equilibrium.

This is the essence of today's gold market. It has not been the traditional way of viewing the gold market. In the past Western investment demands were large relative to commodity demands and supplies. Gold was viewed as one portfolio asset among others. Changes in the relative risk adjusted rates of returns on all assets including gold created changes in the investment demand for gold, and this in turn influenced the price of gold.

However, in today's world, Western investment demand for gold has withered. There has been a long period of disinvestment by Western portfolios. This sustained disinvestment has contributed to the bear market in gold. By now, what disinvestment could be done has been done, and Western investment lies dormant. In its place has emerged a dominant flow of central bank gold. This flow now deeply depresses the gold price. The lower gold price stimulates price sensitive commodity demands, chiefly jewelry demands, thereby restoring market balance. Over the last year or two this new "commodity" paradigm for gold price determination has become widely accepted.

Later in this book, we will focus on the gold market's deep disequilibria and the very interesting dynamics that will eventually restore

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the gold market to a higher price equilibrium. But first, we must understand the supply/demand framework for the gold market and the relative magnitudes of its supply and demand variables. This is the objective of this first chapter.

THE SUPPLY/DEMAND FRAMEWORK

The most widely utilized data on global gold demand is provided by Gold Fields Mineral Services, Ltd. (GFMS). This London-based organization has been conducting a global gold supply/demand survey since the late 1960s and provides us with the only long-term detailed data series available on the global gold market. For this reason, we have no alternative but to use the GFMS data for all the studies of long-term trends that will be included in this report.

Before examining the GFMS gold market balances, it is perhaps best to set out and describe the principal supply/demand items in these balances.

Supply is comprised of four major flows:

- Mine Supply
- Scrap
- Official Sector Flows
- Disinvestment

Demand is comprised of basically two flows:

- Fabrication
- Bar Hoarding Outside Europe and North America

LET US EXPLAIN EACH ONE BEFORE CONSIDERING THEIR MAGNITUDES

- **Mine Supply:** As with any other mineral commodity, this is simply the annual total of all refined gold produced from the world's mines.
- **Scrap:** Part of total annual gold scrap supply is typical of all other metal markets: Gold scrap is recovered from goods which have fallen out of economic use such as electronic applications. However, most gold scrap is rather unique. It is mostly recycled jewelry – that is, old jewelry that is turned in for newer designs. Gold scrap also encompasses gold jewelry and bar that has been sold back into the market to raise cash under times of financial need. These very different sources of gold scrap make this supply item behave very differently from scrap in other metal markets.

***Supply:** We set out first the principal supply items in the gold market.*

***Mine Supply:** The annual total of all refined gold produced from the world's mines.*

***Scrap:** Gold recovered from goods which have fallen out of economic use and recycled jewelry.*

Official Sector Flows: Central bank sales (net of purchases) and borrowed central bank gold which leaves the bank vaults, is sold into the market, and is fabricated into goods such as jewelry.

Disinvestment: Dishoarding of past physical gold purchases and short sales in the forward market.

Demand: Here we set out the principal demand items in the gold market.

Fabrication Demand: Demand for gold from manufacturers of fabricated products, chiefly jewelry.

Bar Hoarding: These are purchases of small bars by savers outside Europe and North America, mainly in the emerging world and Japan.

- **Official Sector Flows:** This encompasses both sales and mobilizations of gold by central banks. Central bank sales (net of purchases) are self-explanatory. The mobilization of gold refers to central bank gold which is lent. In the process of gold lending, physical gold actually leaves the central bank vaults, is sold into the market, and is fabricated into goods such as jewelry. There is a broad array of gold lending practices. Some involve forward sales and gold loans by producers. Some involve bullion dealers who “delta hedge” options written by central banks and producers. GFMS includes these as line items in their supply balances. There are other gold borrowings that involve short sellers engaged in speculative activities. GFMS includes these in the item discussed below: disinvestment.
- **Disinvestment:** In the past investors in Europe and North America bought gold. In the current period they tend to be both dishoarders of past physical gold purchases and short sellers in the forward market. This item, “disinvestment,” is not directly estimated by GFMS; rather it is calculated as a residual that balances the supply and demand sides of their statistical balances.
- **Fabrication Demand:** This is the demand for gold from manufacturers of fabricated products. It differs slightly from end use demands by changes in global inventories of such products. Jewelry accounts for roughly 80% of fabricated gold. Other applications include electronics, dental, decorative, official coins and other coins and medallions.
- **Bar Hoarding Outside Europe and North America:** This corresponds to the annual net purchases of small bars (ten tola bars, kilobars, tael bars) by savers in Japan and the emerging world, chiefly in the Far and Middle East.

THE GFMS SUPPLY/DEMAND BALANCE

With this understanding of these principal items, we set out the Gold Fields supply/demand framework for the last 10 years. In some cases, there may be a reverse supply flow: producer or option hedges may be reduced or positive Western investment rather than disinvestment may occur. These reverse or negative flows are indicated as such.

The above supply/demand data provided by Gold Fields is the Bible of the Gold Industry. It is our contention that there are a lot of things

World Gold Supply and Demand 1987-1996 (tonnes)

Source: Gold Fields Mineral Services

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Supply:										
Mine Production	1,733	1,908	2,063	2,133	2,159	2,232	2,289	2,278	2,269	2,346
Scrap	470	394	393	530	480	487	574	615	625	644
Official Sales	18	-0-	432	196	111	622	482	94	182	239
Loans & Forward Sales	127	290	193	227	51	81	150	106	443	-19
Option Hedging	22	63	-15	7	15	103	-35	57	87	99
Disinvestment	-236	175	1	-188	302	-29	-264	155	-33	163
Total Supply	2,134	2,588	3,068	2,906	3,118	3,487	3,196	3,305	3,572	3,472
Demand:										
Total Fabrication	1,875	2,127	2,538	2,682	2,866	3,205	3,034	3,074	3,266	3,290
Bar Hoarding	259	461	530	224	252	282	162	231	306	182
Total Demand	2,134	2,588	3,068	2,906	3,118	3,487	3,196	3,305	3,572	3,472

wrong with these balances.

Most importantly, there is a significant understatement of annual global gold demand and the gold market deficit.¹ Also, the treatment of flows in the physical gold market associated with a vast market in derivatives is seriously deficient. This is, in fact, not atypical; over the last decade the official statistics for many commodity markets (aluminum, copper, oil, silver, etc.) have been found to have serious errors of omission.

We have many reasons for believing that the GFMS data understates global gold demand and the deficit.

- 1) Another producer organization, the World Gold Council (WGC), does a gold demand survey that points to much higher levels of global demand.
- 2) Bank of England data on flows of borrowed gold indicate higher gold market deficits and therefore imply much higher levels of global gold demand.
- 3) Unreported central bank sales in the 1990-1992 period also imply higher levels of global demand and a higher gold market deficit.
- 4) It is agreed by all that there has been Western dishoarding of *physical* gold over the last decade. This is not reflected in the GFMS data. This also implies a higher deficit and higher demand.

The table above is the official global gold supply/demand balance from Gold Fields Mineral Services (GFMS).

GFMS understates global gold demand and the deficit. Another producer organization, the World Gold Council (WGC), does a gold demand survey that points to much higher levels of global demand.

¹ Defined as the difference between fabrication and bar hoarding demands, on the one hand, and mine and scrap supply, on the other. This deficit is equal to dishoarding (including mobilizations or lending) by the official and private sectors combined.

In this chapter we show how the alternative World Gold Council (WGC) gold demand survey suggests higher levels of global demand. In Chapter Two we will review Bank of England evidence on the magnitude and growth of global gold loans. This analysis will not only show that the global gold market deficit and global gold demand are much higher than GFMS' estimates; it will also show how a vast world of gold flows associated with gold borrowings and gold derivatives are woefully underreported in the GFMS balances. To keep it simple, we will confine considerations (3) and (4) mentioned above (regarding unrecorded central bank sales and underestimated Western disinvestment) to appendices; they support the conclusions of this book, but are far from essential.

GLOBAL GOLD DEMAND: AN ALTERNATIVE SURVEY

The alternative series on global gold demand is compiled by the World Gold Council, a producer sponsored organization whose principal objective is to encourage gold demand worldwide. Its survey of global gold demand is based largely on contacts with final distributors such as gold jewelry retailers whom it works with in promoting sales of gold products. This global gold demand survey began in the late 1980s. Coverage of developing countries began in 1990. Consequently, this survey provides demand data only for the most recent decade. The World Gold Council surveys jewelry and only a few other gold items in certain countries. Over time they have expanded their country and product coverage somewhat, and, in doing so, the base from which they compile their gold demand data.

These two demand surveys provide somewhat disparate estimates of annual global gold demand. The Gold Fields data encompasses all world demands for physical gold by fabricators of gold items. By contrast, the World Gold Council surveys end user (not fabricator) demands for physical gold sold in the form of jewelry for all the countries it surveys, which it believes encompasses approximately 80% of global gold demand. It surveys demands for dental products and official coins and bars for investors in some but not all of the countries in which it works. It does not survey demands for physical gold for use in electronics and other industrial uses and in medallions and decorative applications.

To compare these two series on global gold demand, we can gross the World Gold Council data up to 100% of the geographic market. To this extrapolated global demand estimate we must then add those

The World Gold Council (WGC) survey of global gold demand is based largely on extensive contacts with final distributors, e.g. retailers.

The World Gold Council surveys end user (not fabricator) demands for physical gold sold in the form of jewelry for all the countries it surveys, which it believes encompasses approximately 80% of global gold demand. It also surveys demands for gold in bar, coin and dental alloys in some countries.

To compare these two series on global gold demand, we must gross the World Gold Council data up to 100% of the geographic market. To this extrapolated global demand estimate we must then add those items – electronics, industrial, decorative, and medallions – which GFMS surveys but the World Gold Council ignores.

World Gold Council Estimates Of Global Gold Demand					
WGC Global Demand:	1992	1993	1994	1995	1996
Developing Markets	1,787	1,702	1,699	1,877	1,890
Developed Markets	797	823	816	919	799
WGC Total Markets (80%)	2,584	2,525	2,515	2,796	2,689
WGC Total Markets (100%)	3,230	3,156	3,144	3,495	3,361
Additional Demand Items:					
Electronics	175	179	190	205	207
Industrial & Decorative	84	98	104	108	111
Medals & Coins	29	25	27	35	34
Dentistry *	15	15	15	15	15
Total Additional Demand:	303	317	336	363	367
WGC TOTAL DEMAND	3,533	3,473	3,480	3,858	3,728

*See next section for documentation.

Gold Fields Mineral Services Estimates Of Global Gold Demand					
GFMS Global Demand	1992	1993	1994	1995	1996
Total Fabrication	3,205	3,034	3,074	3,266	3,290
Bar Hoarding	282	162	231	306	182
GFMS TOTAL DEMAND	3,487	3,196	3,305	3,572	3,472

World Gold Council vs. Gold Fields Mineral Services Estimates Of Global Gold Demand					
WGC Total Demand	3,533	3,473	3,480	3,858	3,728
GFMS Total Demand	3,487	3,196	3,305	3,572	3,472
DIFFERENCE IN DEMAND	46	277	175	286	256

The accompanying table shows the GFMS and WGC-based estimates and their differences.

At first glance, it appears that WGC demand data has been roughly 5%-9% higher than that of GFMS over the last four years

items – electronics, industrial, decorative and medallions – which GFMS surveys but the World Gold Council ignores completely, as well as those dental demands which the WGC does not survey in some of the countries in which it operates.

We can see from the above series that there is a considerable discrepancy between these two series. Consistently, the WGC demand data has been roughly 5%-9% higher than that of GFMS over the last four years. It is surprising to us that few analysts and industry participants have noticed the significant disparities in these two data series.

What are we to say about the level of global gold demand given the discrepancy between these two surveys? There are several considerations that bear on this issue. As we explain below, they suggest that the World Gold Council survey is more likely to be correct. In fact, these considerations argue that, if anything, the above estimates that result from extrapolating the WGC data to 100% geographical and product coverage may themselves understate global gold demand.

THE WGC CONDUCTS MORE THOROUGH SURVEYS

The World Gold Council compiles its jewelry demand data from a huge number of retail outlets it works with in the course of its activities to promote the sale of gold jewelry.

In the U.S., for example, its data is derived from 28,000 reporting jewelry outlets. By contrast, GFMS employs only a few professionals who spend only part of their annual effort canvassing fabricators around the globe. For example, in gathering data on U.S. demand, GFMS sends one man to the U.S. for a period measured at most in weeks to gather the source data behind their demand estimates, whereas the WGC derives its demand data from the 28,000 retail points of sale it works with on an ongoing basis. If one looks at the major identifiable errors in global demand data on other commodities, such as aluminum, copper, silver, and oil, it appears that most of these data shortfalls have been errors of omission. The greater comprehensiveness of the WGC survey suggests that its survey is less prone to such errors of omission.

There are many in the industry who view the WGC demand data with suspicion on the grounds that the WGC is a producer organization that is likely to exaggerate the success of the gold industry and its own promotional efforts. The Council has been very conscious of this criticism and has bent over backwards as a result to be conservative in its survey procedures.

In fact, the record shows that, if anything, its survey work is suffering from the errors of omission that any “bottoms up” data gathering exercise is prone to. Three years ago it became apparent to the Council that it had neglected a retail outlet for gold jewelry that was fairly new and had been growing very rapidly – direct television marketing or home shopping networks in the U.S. Subsequent investigation showed that home shopping networks were selling more than 10% of all gold jewelry in the U.S. and that the World Gold Council gold demand survey had been understating U.S. end use demand by the corresponding amount.

This “error of omission” has been corrected, but it opens the possibility that the WGC survey contains other errors of omission in other countries where patterns of retail jewelry distribution have changed rapidly. The WGC personnel that conduct its survey insist that, for most countries, their estimates are based on identifiable purchases of gold

The WGC conducts more thorough surveys. The greater comprehensiveness of the WGC survey suggests that its survey is less prone to errors of omission.

Nonetheless, the record shows that the WGC survey work still suffers from the errors of omission that any “bottoms up” data gathering exercise is prone to. Three years ago it became apparent to the Council that it had neglected a retail outlet for gold jewelry, home shopping networks, which were selling more than 10% of all gold jewelry in the U.S.

jewelry by retailers. They are also sure that they have not identified all existing retailers, suggesting some measure of underestimation of actual gold demand.

DENTAL DEMANDS:

WGC ESTIMATES GREATLY EXCEED GFMS

In the prior section, to arrive at a WGC-based estimate of global gold demand, we grossed up the WGC demand survey data for 100% geographical coverage and added the GFMS demand data for the market segments that WGC does not survey.

This procedure poses two questions: First, does WGC in fact survey 80% of the global market, and second, is the GFMS data on the market segments that WGC does not survey open to question. Clearly, if the geographical coverage of WGC encompasses less than 80% of the global market, the WGC survey data would project a yet higher level of global demand. Also, if GFMS tends to come in with lower estimates of demand than WGC, their estimates of demand in the market segments WGC does not survey may be too low. Again the WGC demand survey would project a yet higher level of global demand.

To settle this issue, we delved into the WGC and GFMS data for greater detail. The smallest item in the WGC gold demand survey – dental products – provided perhaps the most revealing insight into the possible degree of understatement of gold demand by GFMS.

The smallest item in the WGC gold demand survey – dental products – provided the most revealing insight into the understatement of gold demand by the GFMS. GFMS estimates global fabrication of gold for dental applications at 67 tonnes. WGC estimates gold consumption in dentistry for only five countries, the U.S., Japan, Germany, Italy and Switzerland, at 59-62 tonnes.

Gold Demand In Dentistry (tonnes)		
	1995	1996
World Gold Council (end use)	59.5	62.1
Gold Fields Mineral Services (fabrication)	67.3	67.5

World Gold Council Gold Consumption In Dentistry (tonnes)		
	1995	1996
Japan	17.5	18.1
Germany *	22.9	23.9
United States	12.5	13.4
Italy	6.6	6.7
Total	59.5	62.1

* Includes Switzerland

For the entire world, GFMS estimates global fabrication of gold in recent years for dental applications at 67 tonnes. The WGC estimates gold consumption in dentistry for only five countries – the U.S., Japan, Germany, Italy and Switzerland – at 59-62 tonnes.

This comparison is truly striking. These five countries comprise roughly 40% of global GDP and income. We must ask, “Could these five countries consume 90% of all gold fabricated for dental applications in the world?”

Surely dentistry in the other industrialized countries is not so completely different as to use almost no gold alloys.

This comparison is truly striking. These five countries comprise roughly 40% of global Gross Domestic Product (GDP) and income. We must ask, “Could these five countries consume 90% of all gold fabricated for dental applications for all the countries in the world?”

Gold use in dentistry might be greater in these five countries than elsewhere in the world, but certainly not to this degree. Surely dentistry in the other industrialized countries is not so completely different as to use almost no gold alloys. Also, casual observance in developing countries, particularly in countries where gold consumption of jewelry and bar is especially conspicuous, would suggest that, when dental work is done, it often is especially gold intensive. It would seem far more plausible that gold consumption in dentistry worldwide is two times the level that prevails in these five countries, or 120 tonnes per annum – not a mere 8%-12% higher at 67 tonnes.

Examination of the data on dental demand for gold in more detail supports this conclusion.

Gold Use In Dentistry 1996 (tonnes)		
	GFMS (fabrication)	WGC (consumption)
Japan	19.5	18.1
Germany*	19.4	23.9
United States	11.5	13.4
Italy	4.1	6.7
Total	54.5	62.1

* Includes Switzerland

GFMS estimates that the U.S., Japan, Germany, Italy and Switzerland fabricated 54.5 tonnes of gold in dental applications in 1996. WGC estimated that they consumed 62.1 tonnes in the same year. Yet, from what we can determine, these five countries are major exporters – not importers – of dental products incorporating gold. Gold use in dentistry in countries like France or the UK or the Scandinavian countries cannot be that different from its use in Germany, Switzerland, and Italy. No doubt these latter countries are exporters to their neighboring European Union economies. GFMS takes this theme one step further and reveals that, in many developing countries, gold use in dentistry is significant, but the dental alloys consumed are imported from major fabricating nations like Germany and the U.S.

GFMS estimates that the U.S., Japan, Germany, Italy and Switzerland fabricated 54.5 tonnes of gold in dental applications in 1996. These five countries are major exporters of dental products incorporating gold.

...There have been some interesting developments in the dental market in the Far East which are not captured in (our) statistics because they relate to consumption rather than fabrication. For instance, there has been solid growth in the use of dental alloys in Thailand, almost every one of which are produced locally, with most supplies being imported from Germany and the United States. The same is true in Indonesia and Malaysia, where growing affluence has facilitated greater spending on both preventative and remedial dental health care. Essentially all of the consumption in these countries is fed from imports from Europe and the United States.

Source: Gold Fields Mineral Services, Gold 1997 Report

Surely, owing to exports, dental consumption of gold in the U.S., Japan, Germany, Italy and Switzerland should have been far below the 54.5 tonnes of dental fabrication demand for these five countries estimated by GFMS. Yet WGC found in its survey work 62.1 tonnes of demand in those five countries.

If the WGC survey on end use dental demands in these five countries is correct, GFMS estimates of fabrication of gold in dental products in these countries are much too low. If this is so for five countries where data availability is fairly decent, it seems probable that fabrication of gold in dental products is also underestimated in the endless number of countries where data collection is far more difficult and where the conservative GFMS shows only negligible amounts of dental fabrication demands. We said above that, based on the 40% share of these five countries in global GDP and global income, global demands for gold in dentistry could be much larger than GFMS estimate of only 67 tonnes. A bottoms up inspection of the dental data in detail tends to confirm this top down conclusion.

We posed this problem to the two dental market professionals that provide the World Gold Council with its estimates of dental gold demands. Perhaps of greatest significance is that these two professionals work full time on gold use in dentistry and have long years of experience in the field. As consultants to, and former employees of, the leading firms in the industry, they are familiar with all the major fabricators and their markets. This is in striking contrast to GFMS where one professional who is responsible for estimating all global gold demands spends only a small part of his time on an application that encompasses only 2% of global gold demand. It is quite clear that the WGC dental demand estimates far exceed GFMS, yet Gold Fields does not make an effort to square their estimates with WGC's expert sources.

Owing to exports, consumption of gold in the U.S., Japan, Germany, Italy, and Switzerland should have been far below the 54.5 tonnes of fabrication demand for these five countries estimated by GFMS. Yet WGC found 62.1 tonnes of demand in these five countries.

GFMS estimates of fabrication of gold in dental products must lie well below their true levels in these countries.

WGC experts estimate that 20%-25% of gold fabricated into dental products in the U.S., Germany, Japan, Italy and Switzerland is exported outside this bloc. Given 62.1 tonnes of dental consumption in 1996 in these five countries, total dental fabrication of gold in these countries would be 80 tonnes – 47% higher than GFMS estimate of 54.5 tonnes.

If GFMS underestimates fabrication outside these five countries by a similar amount, such fabrication in the rest of the world would approximate 19 tonnes, projecting a global total for fabrication of gold in dentistry of 99 tonnes.

This comparison between the GFMS and WGC data on dental demands poses the question, by how much might GFMS understate demands for gold in other gold applications?

The WGC experts estimate that 20%-25% of gold fabricated into dental products in the U.S., Germany, Japan, Italy and Switzerland is exported outside this bloc. Given 62.1 tonnes of dental consumption in 1996 in these five countries, total dental fabrication of gold in these countries would be 80 tonnes – 47% higher than the GFMS estimate of 54.5 tonnes. If GFMS underestimates fabrication outside these five countries by a similar amount, such fabrication in the rest of the world would approximate 19 tonnes, projecting a global total for fabrication of gold in dentistry of 99 tonnes.

These WGC experts provided us with an alternative global dental demand estimate. They estimate that the U.S., Germany, Japan, Italy and Switzerland account for 70% of global dental expenditures in the Western world. This market share projects another 27 tonnes of dental gold use in the rest of the Western world. If one adds GFMS' estimate of three tonnes of fabrication in the former East Bloc, we get an estimate for global demand in dentistry of 92 tonnes. These very reasonable and mutually supportive calculations by WGC's full time industry experts suggest a global demand for gold in dentistry of more than 90 tonnes in 1996 – more than one-third higher than the GFMS estimate.

JEWELRY AND BAR/COIN – AGAIN WGC ESTIMATES ARE HIGHER

The comparison between the GFMS and WGC data on dental demands and the possibly large understatement (in percentage terms) of global dental demands by GFMS is striking.

Perhaps there is something special about the dental market for gold that makes it an exception. But it poses the question, by how much might GFMS understate demands for gold in other gold applications? We cannot examine this issue for the many market sectors that the WGC does not survey like electronics and industrial applications, but we can compare the GFMS and WGC demand data on gold jewelry and bar/coin.

Though GFMS focuses primarily on estimates of fabrication rather than consumption demands, they have published estimates of gold jewelry consumption in 20 major countries for recent years. We do not know exactly how they derive these estimates and how they are supposed to relate to global gold jewelry fabrication demands, but they provide a basis for comparing the jewelry demand surveys of the

Gold Jewelry Consumption 1995-1996 (tonnes)				
Country	1995		1996	
	GFMS	WGC	GFMS	WGC
India	371	477	405	508
United States	311	304	317	320
China	288	223	273	209
Saudi Arabia	163	143	173	145
Turkey	93	129	127	143
Indonesia	126	110	123	118
Italy	113	108	103	102
Japan	105	112	100	95
Taiwan	100	133	91	98
South Korea	61	104	61	110
Germany	61	42	60	39
Hong Kong	58	43	53	40
Arabian Gulf States	50	88	53	101
Thailand	54	110	48	98
France	48	52	48	53
UK & Ireland *	46	39	47	40
Totals	2,048	2,217	2,082	2,219
Total Ex-China	1,760	1,994	1,809	2,010

* WGC excludes Ireland

two organizations. The table above encompasses estimates of jewelry demand for those countries for which both organizations provide consumption data.

We mentioned earlier that WGC demand data for China appears to be an anomaly. This table highlights this, as China is the only country where the WGC estimate of demand is far below that of GFMS. There are special reasons for this, which we will explain shortly. Excluding China, the WGC total for end use jewelry consumption is more than 13% higher than GFMS in 1995 and 11% higher in 1996.

The last direct comparison we can make between the GFMS and WGC gold demand series is for the market segment encompassing bars and official coins. In the following table we compare WGC's estimates of bar and coin demands in the countries it surveys with GFMS estimates of bar hoarding in those same countries.

For 1995 and 1996, WGC's estimates of bar/coin demand for the region the WGC surveys averages more than 100 tonnes per annum or almost 40% higher than GFMS' estimates. Once again, a direct market segment comparison yields a significantly higher WGC estimate of demand.

Excluding China, the WGC total for end use jewelry consumption is 12% higher than that of GFMS.

For 1995 and 1996, WGC's estimates of bar/coin demand for the region the WGC surveys averages more than 100 tonnes per annum or almost 40% higher than GFMS' estimates. Once again, a direct market segment comparison yields a significantly higher WGC estimate of demand.

Bar Hoarding And Coin Purchases 1995-1996 (tonnes)				
Country	1995		1996	
	GFMS	WGC ¹⁾	GFMS	WGC ¹⁾
India	80	60	95	70
China	10	1	6	2
Taiwan	9	27	1	25
Hong Kong	2	1	-3	1
Thailand	26	24	27	23
Singapore	-2	2	0	2
South Korea	3	17	5	16
Malaysia	0	3	0	3
Indonesia	5	9	-2	11
Vietnam	23	27	30	28
Saudi Arabia	13	50	1	40
Gulf States	3	16	3	17
Turkey	1	10	0	10
Brazil	-24	7	0	9
Mexico	0	7	0	0
Germany	0	31	0	0
U. S.	0	11	0	12
Japan	129	160	25	57
Totals	290	465	174	331
GFMS Coin ²⁾	+67		+50	
Totals	357	465	224	331

1) There was no coin/bar data available for France, Italy or the U.K.

2) GFMS does not provide data on end use purchases of official coins on a country-by-country basis. To make these series comparable, we assume that the WGC surveys a region encompassing 80% of global demands and that this applies to official coin as well as other market segments and then add 80% of GFMS' estimates of global coin sales to their bar hoarding totals for these countries.

What might we conclude? Perhaps the WGC demand estimates are correct. Perhaps the true level of global jewelry demand exceeds GFMS' estimates by 12%. Perhaps the true level of bar/coin demands exceed GFMS' estimates by 39% on average. Perhaps the true level of all other (largely industrial) demands exceed GFMS estimates significantly. Our look at the data on the dental market suggests that the true level of these demands is perhaps 37% higher than GFMS' estimates. The pattern of underestimation in jewelry, bar/coin and dental applications taken together suggests that the true level of demand in the remaining market segments may be easily 20% above GFMS' estimates. The following table grosses up the GFMS demand data by market segment to WGC-indicated levels.²

² We realize that this is an instance where we are multiplying apples by oranges. GFMS data on bar demands refer to end use demands. Their other data is on fabrication demands. Our GFMS/WGC comparisons involved end use demands for the most part. As we noted above, we have no idea of the supposed relation between GFMS jewelry fabrication and consumption estimates. Suffer, dear reader, our multiplying apples and oranges. This exercise makes a point that is basically valid.

Global Gold Demand By Market Segments (tonnes)						
GFMS vs. WGC						
	1995			1996		
	GFMS	Add Factor	WGC	GFMS	Add Factor	WGC
Jewelry	2,767	13%	3,135	2,808	11%	3,120
Dental	67	37%	92	67	37%	92
Bar/Coin	390	30%	506	245	48%	362
Other	348	20%	418	353	20%	424
Total	3,572		4,151	3,473		3,998

These demand estimates are quite a bit higher than our first pass projections from WGC's survey. Why? Part of the answer lies with the WGC data on China, which we have noted above and which we will now address.

WGC-Based Global Demand 1995-1996 (tonnes)		
	1995	1996
Calculation I, Grossing up WGC data	4,258	3,928
Calculation II, Market Segment Comparisons	4,151	3,998

WGC UNDERESTIMATES CHINESE DEMAND

Estimates of Chinese demand are conspicuously low. To avoid excessive detail in this text, we refer the reader to an appendix to this chapter on this subject of Chinese gold demand. The basic problems with the WGC gold demand data for China are the following:

- 1) WGC is estimating Chinese gold demand at 230 tonnes or less in recent years. This is roughly 70 tonnes less than the estimate of the usually conservative GFMS.
- 2) There have been much higher estimates of Chinese gold demand by well informed observers. Mr. Robert Sitt, a long time dealer in gold who is especially familiar with the Chinese terrain, has estimated peak Chinese demand in the past at as much as 800 tonnes vs. a peak of 250 tonnes in 1992 by WGC. Joni Lai of the World Gold Council at their annual meeting in 1993 estimated 1992 Chinese gold demand at more than 350 tonnes.
- 3) Current WGC estimates of gold demand in China place the ratio of gold consumption in China to GDP (gold's intensity of use) at levels comparable to those of developed countries like the U.S. and at a small fraction of the level that prevailed in all other Far East Asian countries at comparable stages of economic development. If Chinese gold consumption was typical of these comparable Far East economies, even Mr. Sitt's estimates would be low.

The accompanying table grosses up the GFMS demand data by market segment to WGC indicated levels. This exercise implies a level of global gold demand that is quite a bit higher than our first pass projections from WGC's demand survey.

The WGC estimate of gold demand in China is roughly 70 tonnes less than the estimate of the consistently conservative GFMS. There have been much higher estimates of Chinese gold demand by well informed observers.

WGC estimates the ratio of gold consumption in China to GDP at a small fraction of the level that prevailed in all other Far East Asian countries at comparable stages of economic development.

Restrictive Chinese government policies toward gold retailing and WGC's procedures, which are based on surveys of recognized retailers, have resulted in a serious underestimate of Chinese gold consumption of more than 100 tonnes.

- 4) WGC survey data suggest that 1997 gold consumption in China, almost all of it in jewelry, is almost 20% below its peak level of 250 tonnes in 1992. This is despite sustained double digit real income growth in China, resulting in almost a doubling in aggregate real income, amidst roughly a constant real gold price in the domestic Chinese currency. This does not appear plausible.
- 5) The WGC explains the anomaly of such a low level of gold consumption in China to very restrictive government policies governing the retail distribution of gold jewelry in China. All gold jewelry stores are supposed to be state owned. There are only 8000 or so such outlets for 1.3 billion people in China, vs. 140,000 stores for well under 1 billion people in India. WGC admits that there are informal channels of distribution of gold jewelry in China. Our guess is that the conservative WGC, with its typical orientation toward legitimate retail outlets for jewelry, seriously underestimates the informal distribution of gold jewelry in China.

We conclude from the above considerations that the World Gold Council demand data on China is unique; especially restrictive Chinese government policies toward gold retailing and WGC's procedures, which are based on surveys of recognized retailers, have resulted in a serious underestimate of Chinese gold consumption. We estimate that the actual level of Chinese gold demand is at least 100 tonnes higher than WGC estimates and may be several hundred tonnes higher.

GFMS estimates fabrication demand whereas the WGC surveys end user demand.

THE IMPORTANCE OF INVENTORY DEMAND: GLOBAL FABRICATION DEMAND GREATLY EXCEEDS WGC END USE DEMAND ESTIMATES

Over the long-term, fabrication demands (estimated by GFMS) should consistently exceed end use sales (estimated by the WGC), since, in a growing market, fabrication exceeds final sales by the percent of factory input that goes into the rising stock of product inventories. Yet, the GFMS data on global gold demand is consistently lower – not higher – than the WGC-based demand data.

When queried on why there is a discrepancy between the WGC and GFMS data series, both organizations comment that GFMS estimates fabrication demand whereas the WGC surveys end user demand, so that changes in inventories of fabricated products may account for this discrepancy.

Such inventory fluctuations may explain why GFMS estimates of demand may be less than WGC estimates over perhaps a one or two-year period, but they would not explain the persistent discrepancy evident in the above two data series. *In fact, over the long term, fabrication demands (estimated by GFMS) should consistently exceed end use sales (estimated by the WGC), since, in a growing market, fabrication exceeds final sales by the percent of factory input that goes into the rising stock of product inven-*

tories. Yet, the GFMS data on global gold demand is consistently lower – not higher – than the WGC demand data.

We estimate that global fabrication demand exceeds WGC estimates of final end user demand by 200 tonnes or so on average. This is so because the gold jewelry industry has high overall working inventories and because physical gold demand has a rapid trend rate of growth. To illustrate this we will look at the gold jewelry industry from both a top down and bottom up perspective. For simplicity's sake, we will confine this discussion to gold jewelry which comprises almost 80% of global demand. However, the conclusions apply more or less to the remainder of physical gold demand.

In an economy such as the U.S. the stock of inventory of manufactured goods is equal to roughly 60% of the value sense in the final sale of such manufactured products (\$1.2 trillion of inventory at market prices vs. \$2.0 trillion of manufactured goods production and imports).

Inventory to sales ratios vary widely across industries depending on a number of factors. For example, inventories of most foods tend to be low because they are perishable. Inventories of petroleum and petroleum products are low since, being bulky and being liquids, they are expensive to store. Inventories of apparel and computers also tend to be low since style and model changes soon render them obsolete. Inventories of capital goods like machines tend to be low since they are often made to order. These are reasons why economic agents work with relatively low inventories. If a product has the very opposite characteristics of these goods, inventories will tend to be high. This is especially true of gold jewelry.

Gold is immutable. Gold jewelry, being a very high value item, requires little space to store or display. And, as the promotion for pure gold jewelry correctly advertises, “gold jewelry is forever;” it does not become obsolete. All these are reasons why the global stock of gold and gold products at fabricators, distributors, and retailers should be high relative to other goods.

How high is the ratio of gold in inventory to gold product sales compared to the 60% average for all manufactured products in an economy like that of the U.S.? In the U.S. a very efficient retailer like Kmart or Wal-Mart has an inventory to annual sales ratio of 25% to 33%. By contrast a modern specialized jewelry retailer turns over its inventory only once a year, not three or four times a year; in other words, the

Gold is immutable. Gold jewelry, being a very high value item, requires little space to store or display. And, as the promotion for pure gold jewelry correctly advertises, “gold jewelry is forever;” it does not become obsolete. All these are reasons why the global stock of gold and gold products at fabricators, distributors, and retailers should be high relative to other goods.

stock of retail gold jewelry inventories are 100% of annual sales.

But retail inventories are only the inventories at the end of the production and distribution pipeline. For the U.S. economy overall, retail inventories constitute only one-third of all inventories. Surely in the gold jewelry industry a relatively high share of inventory is on display on the retail shelves as opposed to the wholesalers shelves or the factory floor. But the inventories of gold at manufacturers and wholesalers in the form of factory inputs, work in process inventory, and final product inventory must be significant. The largest fabricator of gold jewelry in the U.S. has an average inventory that equals 80% of annual sales. Because more and more of gold jewelry production occurs outside the U.S., imports have become more important, requiring a considerable network of wholesalers who hold inventory. The odds are that, for all U.S. gold jewelry production and wholesale distribution combined, the ratio of inventories to sales is comparable to the ratio of inventories to sales at the retail level.

We will assume that the share of retail inventories in total inventories in the entire gold jewelry pipeline is relatively high at 50% vs. 33% for all manufactured products. That would place combined fabricator and wholesale inventories of gold at 100% of annual final sales of gold in jewelry.

Above we focused on the largest most efficient jewelry retailers and fabricators in the United States. Inventory to sales ratios are no doubt higher for smaller scale “old fashioned” jewelry retail outlets in the U.S. These types of outlets remain predominant in Europe and Japan where modern high volume distribution with highly computerized inventory control is less advanced.

In the emerging world, it is hard to estimate the level of gold inventories in the fabricator, wholesaler, and retailer pipeline. There, lower profit margins and less access to finance may make the inventory to sales ratio in gold jewelry manufacture and distribution lower; however, less efficient inventory management and distribution in general in these countries would tend to make inventory levels higher than in the U.S. We will assume that, for all global gold jewelry sales, the stock of inventory at all levels of production and distribution is 200% of sales. We will extend this inventory to sales ratio to the production and wholesaling of the other gold products that make up the remaining 20% of final physical demand.

We will assume that, for all global gold jewelry sales, the stock of inventory at all levels of production and distribution is 200% of sales.

As we have just shown, the WGC final sales demand surveys put global final sales at more than 4,000 tonnes a year in 1995-1996. Then, global inventories at all stages of production and distribution should have approximated 8,000 tonnes. Fabricator and wholesale inventories combined should approximate 4,000 tonnes. We will show in coming chapters that the trend rate of growth of physical gold consumption is roughly 5.0% per annum. If the stock of inventories of gold products is 8,000 tonnes and if this stock is growing at 5.0% per annum, in an average year inventory demand for gold will tend to be 400 tonnes above and beyond final demand. This means that total annual fabrication demand would average 400 tonnes above final sales demand.

The World Gold Council surveys purchases of gold in jewelry by the trade, that is, by firms such as jewelry retailers that buy gold products for final distribution to consumers. Therefore, its gold demand data encompasses not only final sales of gold jewelry to consumers; it includes inventory demands at the retail level as well, thereby capturing roughly half of global inventory demands in the gold jewelry pipeline.

However, there is another half of total inventory demands at the fabricator and wholesaler level that the Council's survey data excludes. The WGC survey must be excluding in a similar fashion inventory demands at the fabricator and wholesaler levels in the markets for official coins and dental products. (The WGC dental experts estimate gold inventories at dental fabricators equal one times sales.) The same is probably true for other industrial applications the Council does not survey. We are less sure about the relative shares of inventories of small bars at these various stages of the product pipeline and the Council's estimates of sales of bar are possibly more inferential. However, since bar demand is only 5% to 10% of total demand, any difference in inventory levels in this market segment will not noticeably distort our argument.

Actual fabrication demand, then, should exceed WGC-based estimates of demand by half of all annual inventory demands. Therefore, the GFMS fabrication demand data for all gold products should be roughly 200 tonnes higher than the WGC-based final demand data,

WGC final sales demand surveys put global final sales at close to 4,000 tonnes a year. Global inventories should approximate 8,000 tonnes. If this stock of inventories is growing at 5% per annum, inventory demand for gold will tend to be 400 tonnes above and beyond final demand.

WGC data captures the half of all inventory demands at the retail level but not the half at the wholesale and fabricator level. Therefore, fabrication demand should be 200 tonnes higher than WGC-based final demand data.

³ Some have argued that modern inventory management may have reduced inventories in the gold product pipeline to the degree needed to offset a tendency toward large gold inventory demands when final sales are growing at trend. This is unlikely. If one looks at the U.S., the inventory to sales ratio has declined roughly 10% or 1% per year from the comparable point in the last business cycle 10 years ago. Gold jewelry manufacturing has gone global over the last 10 years; such globalization requires more inventories in worldwide distribution. It is not apparent that jewelry inventory to sales ratios have fallen in the production and distribution of gold products in the more traditional emerging markets where growth has been disproportionately high. And lastly, as we will see in the following chapters, to an increasing degree gold fabricators have resorted to low cost gold loans to finance their inventories. This change in financing costs would encourage, not discourage, the holding of gold in inventory.

not several hundred tonnes below it.³

CONCLUSIONS ON SUPPLY/DEMAND

Where should we come out on this somewhat complex issue? What estimate of global gold demand is most plausible? There are six relevant points that should be considered:

- 1) It is apparent that the WGC demand survey is likely to be more thorough than that of GFMS for the countries and products it covers.
- 2) WGC's record of needed upward revisions to its data suggests possible underestimation of global gold demand.
- 3) WGC's surveys of end use demand should understate actual fabrication demands by the amount of gold that goes into factory and wholesale inventories. This should average 200 tonnes per annum.
- 4) WGC's estimates for Chinese demand seem far too low – possibly on the order of hundreds of tonnes.
- 5) Gold Fields estimates of demand for those gold uses not surveyed by WGC (e.g. electronics, industrial, etc.) are probably too conservative. Comparison of the two data sets on dental, jewelry, and bar/coin demands suggests a possible understatement of 50 to 100 tonnes or more.
- 6) The one factor that might argue for a possible overestimation of global demand based on World Gold Council data is that, through year-end 1996, the WGC may have been surveying more than 80% of the global market.

The first of the above six points argues that extrapolations of global demand based on the WGC survey data are superior to GFMS estimates. The following four points all suggest that our first pass extrapolations of global gold demand from the WGC gold demand survey are too low.

Only the sixth point opens up a possibility of – but constitutes no evidence for – an overestimation of global gold demands based on WGC data. However, our comparisons of these two demand surveys by individual market segments (dental, jewelry, and bar/coin) point to WGC end use demand estimates of 4,000 tonnes or more per annum. This is consistent with WGC's contention that they survey roughly 80% of world markets.

As a consequence, we will use *World Gold Council*-based global demand estimates. We will adopt our first procedure for projecting global demand data from the WGC partial survey. To adjust for underestimates by WGC of Chinese demands, we will add 150 tonnes

We will use WGC-based global demand estimates. To accommodate the possibility of some very significant underestimation of Chinese demand in this data, we will add roughly 150 tonnes to the annual demand data extrapolated from the WGC gold demand survey. To adjust for underestimates of other demands (electronics, industrial, dental, etc.) by GFMS where they are the only source of data, we will add 65 tonnes of demand to these combined market segments. To encompass global inventory demands, we will also add 200 tonnes per annum to this total demand estimate.

to the WGC gold demand survey. To adjust for underestimates of electronic, industrial, dental, and other demands by GFMS, we will add 65 tonnes to this subtotal. To encompass global inventory demands, we will also add 200 tonnes per annum to this total demand estimate extrapolated from the WGC survey.

In some years, gold demand growth exceeds trend; in others it falls below it. As a consequence, year-to-year inventory demand will oscillate around this average. (This phenomenon is discussed in much greater detail in coming chapters.) The deviations year-to-year between the GFMS and WGC demand data series are roughly consistent with the direction they should move in based on changes in inventory demand.

However, if inventories are as large as we believe they are, the requisite inventory fluctuation should in fact make these two series deviate to a much greater degree. At the current stage of our dissertation, we cannot extend our analysis to this degree of detail: At best we can only discern the degree of understatement of demand *on a trend basis*.

For this reason, we will only adjust the WGC data for 1994 and 1995 for trend levels of inventory demand since only then was end use demand growth close to its long-term 5% trend rate. Because end use demand did not grow in 1996, there was probably no net inventory demand. However, the level of end use demand was such that, had there been trend global end use demand, overall demand would have been close to the 1995 level.

These decisions provide the following global demand data series, which imply that trend global gold demand tends to exceed GFMS estimates on average by roughly 600 tonnes per annum.

WGC-Based Global Gold Demand (tonnes)			
	1994	1995	1996
WGC Survey (80%) of World Market	2,515	2,796	2,689
WGC Survey (100%) of World Market	3,144	3,495	3,361
Unsurveyed Markets (GFMS)	321	348	352
Underestimate of Industrial Markets	65	65	65
Underestimate of China Market	150	150	150
Annual Inventory Demand	200	200	0
Total WGC-Based Demand	3,880	4,258	3,928
Total GFMS-Based Demand	3,305	3,572	3,472
Difference in Demand Estimates	575	686	456

The above considerations generate the following revised supply/demand balances. For simplicity's sake, we adopt the GFMS

These decisions provide the accompanying global demand data series, which imply that trend global gold demand tends to exceed GFMS estimates on average by roughly 600 tonnes per annum.

Higher estimates of global gold demand indicate that the deficit in the gold market has been on the order of 1,100 tonnes per annum in the 1994-1996 period when the gold price averaged \$386.

mine and scrap data. Inserting the above WGC-based estimates of global gold demand data into the GFMS supply/demand framework generates the following balances:

Revised Supply/Demand Balances			
Supply:	1994	1995	1996
Mine Production	2,278	2,269	2,346
Scrap	615	625	644
Official Sales	94	182	239
Producer Gold Loans, Forward Sales And Option Hedging	106	443	80
Disinvestment & Other Undisclosed Borrowed Gold Flows	787	739	639
Total Supply	3,880	4,258	3,928
Total Demand	3,880	4,258	3,928
Gold Market Deficit	987	1,364	938

On average, the deficit in the gold market in the years 1994-1996 was roughly 1,100 tonnes per annum.

POSTSCRIPT

WGC-BASED GLOBAL GOLD DEMAND ESTIMATES – AN ALTERNATIVE CALCULATION

The above estimates of global gold demand were derived by 1) grossing up World Gold Council gold demand survey results for 100% of the global market, 2) adjusting for unsurveyed market segments, 3) adjusting for underreporting of Chinese demands, and 4) adding inventory demands at the fabricator and wholesale levels. This involves four special “adjustments,” all of which involve some measure of “guesstimate.” Therefore, there is a lot of room for error in the final estimates of global gold demand.

We have an alternative, simpler estimate of global gold demand based on the WGC gold demand survey. Earlier in this chapter we compared WGC and Gold Fields Mineral Services final or end use demand data for three market segments: dental, jewelry and bar/coin. On average, the WGC estimates were more than 20% higher than the GFMS estimates. We made the assumption that, for the markets not surveyed by WGC, the true level of demand was also 20% above GFMS estimates. We then adjusted the GFMS demand data for the degree of underestimation implied by these GFMS/WGC comparisons. That resulted in the following estimates for global gold demand in the period 1995-1996.

Global Gold Demand by Market Segments (tonnes)						
GFMS vs. WGC						
	1995			1996		
	GFMS	Add Factor	WGC	GFMS	Add Factor	WGC
Jewelry	2,767	13%	3,135	2,808	11%	3,120
Dental	67	37%	92	67	37%	92
Bar/Coin	390	30%	506	245	48%	362
Other	348	20%	418	353	20%	424
Total	3572		4,151	3473		3,998

This calculation provides global demand estimates incorporating WGC survey data that is strikingly close to our first calculation.

WGC-Based Global Demand 1995-1996 (tonnes)		
	1995	1996
Calculation I, Grossing Up WGC Data	4,258	3,928
Calculation II, Market Segment Comparisons	4,151	3,998

THE INCREDIBLE
WORLD OF GOLD
BORROWINGS

The gold market has been shocked by a statement by the Bundesbank that it has lent perhaps 10% of its 3,700 tonnes of gold. The Swiss have begun to lend their gold in 100-tonne tranches. Most market participants have thought that total outstanding gold loans including those financed by private deposits were on the order of perhaps 3,000 tonnes, and that these gold loans were all sourced from deposits and swaps from the lesser central banks, some of whom lent all their gold.

Now that it is apparent that even the Bundesbank and Swiss National Bank have lent hundreds of tonnes of gold, it is clear that virtually all the central banks may have lent gold and that the total volume of gold loans can far exceed consensus estimates.

In this chapter we explain why we believe that outstanding gold loans are two and possibly three times consensus estimates. Gold lending far in excess of Gold Fields Mineral Service, Ltd. (GFMS) estimates provides the massive 500 to 600 tonne per annum additional supplies that have been feeding the 500 to 600 tonne per annum global gold demands and market deficit that the GFMS statistics have failed to capture.

Once again we are dealing with statistics. These are very important statistics. The italicized liner notes offer a summary for those with a limited appetite for analysis of statistics. We recommend that this chapter be read in its entirety.

THE SIZE OF THE GOLD LOAN MARKET

There is a vast world of gold lending and borrowing. Several dozen banks around the world accept deposits in gold. Most of these deposits are placed by central banks. A much smaller amount of gold is placed on deposit by private individuals.

As with any currency, these banks make loans against these deposits. They lend this gold to producers to finance mines and hedge production, to bullion dealers to hedge option positions and finance their general corporate activities, to speculators who desire to go short gold, and to jewelry fabricators to finance inventories of gold. Interest is paid by the ultimate borrowers of gold loans to the bankers; the bankers take a small margin for acting as intermediaries and pass some of this interest income on to the ultimate depositors.

In addition to such straight forward bank inter-mediation, central banks also engage in gold swaps with bullion dealers who then use these swaps as the basis for extending gold loans. The combined total of all private and official bullion deposits and official swaps are the funding basis for the world's outstanding gold loans.

There is a consensus among researchers in the gold market that the total volume of gold loans outstanding globally was on the order of 2,500 tonnes at year-end 1995. This figure was arrived at by Gold Fields Mineral Services, by Ian Cox for the World Gold Council, and by James Cross of the Reserve Bank of South Africa. It was derived largely from surveys of producers who hedge and central banks who were believed to write or sell calls which had to be "delta hedged" with borrowed gold.

We do not agree with this consensus.

It is our assessment that, at year-end 1995, the total volume of gold loans was at least twice this consensus figure and, in all probability, it was much more. We understand that most participants will regard this claim as "wild" and impossible and dismiss it out of hand. However, in our opinion it is built on far more solid information than the surveys which the consensus has relied upon.

In early 1994 the Bank of England publicly estimated outstanding official sector gold deposits at 1,500 tonnes. Swaps were close to 400 tonnes. In November of 1995 they issued a report that gold loans had

Several dozen banks around the world accept deposits in gold. Most of these deposits are placed by central banks. A much smaller amount of gold is placed on deposit by private individuals. As with any currency, these banks make loans against these deposits. They lend this gold to producers to finance mines and hedge production, to bullion dealers to hedge option positions, to speculators who desire to go short gold, and to jewelry fabricators to finance inventories of gold. Central banks also engage in gold swaps that finance gold loans.

There is a consensus among researchers in the gold market that the total volume of gold loans outstanding globally was on the order of 2,500 tonnes at year-end 1995.

more than doubled and swaps had increased by at least 50% over an 18-month period going into mid-1995. Considerable gold borrowing occurred late in 1995. Their statements suggest a global gold loan aggregate in excess of 4,000 tonnes by year-end 1995.

The Bank of England estimates were based on survey data that focused on London. Estimates were made for some other centers but not for Switzerland. Switzerland was a major omission. Our research suggests that the Bank of England's estimates for other centers outside London were probably quite conservative. On this basis, we estimate official deposits and swaps were close to 3,000 tonnes at the beginning of 1994 and roughly 6,000 tonnes at the end of 1995. To these totals we add 500 tonnes of private gold deposits.

There have been significant additional gold borrowings since 1995. As a consequence, the total gold loan book must be much larger today than it was in 1995. We will argue below that this total may now be 8,000 tonnes or more than two times consensus estimates.

In essence, we contend that cumulative gold lending over the last decade has been many thousands of tonnes in excess of consensus estimates. This has huge implications for our conceptualization of the gold market. It suggests that global gold demand has been vastly underestimated; it creates "room" for substantial rumored unreported official purchases of gold; it suggests that speculator shorts in gold could be very large; it points to unrecorded gold borrowings by fabricators and bullion bankers for general corporate purposes; it points to a huge volume of outstanding official sector calls which are delta hedged by dealers with borrowed gold; and it implies that there is less gold in central bank vaults than is widely believed.

The implications of our claims regarding the volume of gold lending are nothing short of revolutionary. In what follows, we set forth our evidence, our reasoning, and our assessment of these implications.

A WINDOW ON MASSIVE GOLD BORROWINGS 1994-1995

Mr. Terry Smeeton of the Bank of England told us the following on November 20, 1995:

The amounts of gold available to the market from central banks have undoubtedly continued to grow and this development is confirmed by the surveys the Bank in its capacity as supervisor of the London gold market from time to time undertakes. We believe that deposits from the central

An estimate derived from Bank of England surveys suggests that global gold demand has been vastly underestimated; it creates "room" for substantial rumored unreported official purchases of gold; it suggests that speculator shorts in gold could be large; it points to a huge volume of outstanding official sector calls which are delta hedged by dealers with borrowed gold; and it implies that there is less gold in central bank vaults than is widely believed.

Disclosures of the Bank of England were based in part on a survey questionnaire given to the 14 principal gold market makers in the City of London that made up the LBMA at the end of 1995.

bank sector with the leading bullion players in London have more than doubled over the past eighteen months. The indications are that swap activity has also risen by at least 50 percent over the same period.

Mr. Smeeton also spoke at the Australian Gold Conference in March of 1994. At that conference he made two noteworthy statements:

In total, I estimate that over 50 central banks are involved in the leasing market...and there is perhaps some 1,500 tonnes of central bank gold on loan to the market.

While leasing is the most common activity, at least 20 central banks are engaged in swaps, options, and futures. This is double the number of banks who were regular players a few years ago.

With these statements in mind, what should we conclude from these disclosures of the Bank of England? First, in his March 1994 statement, Mr. Terry Smeeton distinguishes between leasing and loans, on the one hand, and swaps on the other. In his second statement in November 1995, he contrasts central bank deposits with swaps. We assume that the 1,500 tonnes of outstanding central bank loans or leases of early 1994 are the same operations which are referred to as central bank deposits in the November statement.

If so, it would appear that the 1,500 tonnes of central bank leases, loans or deposits outstanding (presumably at year end 1993) more than doubled by mid-1995.¹ Let us guess that these central bank deposits outstanding at that time were 3,100 tonnes.

Swaps, which are distinguished from leases, loans or deposits in both statements, were a less common activity. We believe that the Bank of England estimated that there were almost 400 tonnes of swaps outstanding at the beginning of 1994. These swaps increased in an 18 month period going into mid-1995 by at least 50%. We assume that by mid-1995, these outstanding swaps were on the order of 600 tonnes. From these statements by the Bank of England we estimate that these 1,900 tonnes of official sector deposits and swaps almost doubled to 3,700 tonnes by mid-1995.

¹ No precise dates are given for either of these surveys. There were 20 months between these two statements. The second statement discusses deposit and swap growth over an 18 month period. We are assuming the first of these statements reflects year-end 1993 positions and the second mid-1995 positions. This may not be quite right but, even if so, it is not likely to change the thrust of our argument.

One thousand five hundred tonnes of central bank deposits were outstanding at year-end 1993. These more than doubled by mid-1995 to perhaps 3,100 tonnes.

The Bank of England estimated there were 400 tonnes of swaps outstanding at the end of 1993. These swaps increased in an 18-month period going into mid-1995 by at least 50% to 600 tonnes.

The second of these two Bank of England surveys reflects balance sheets at the middle of 1995. In the final two quarters of 1995 South African hedging programs added significantly to the recorded volume of producer hedges outstanding. Over the 18-month period reported on by the Bank of England, total gold deposits and swaps increased at a rate of 25% every six months. For the remaining six months in the 1994-1995 period such gold deposits and swaps no doubt increased as well. We will be conservative – we will assume that in this other 6-month period, this aggregate grew at perhaps 10%. That would give us a total volume of central bank gold deposits and swaps of almost 4,100 tonnes by year-end 1995.

In the final two quarters of 1995 South African hedging programs added significantly to producer hedges outstanding.

That would give us a total of gold deposits and swaps of perhaps 4,100 tonnes by year-end 1995.

Gold Deposit & Loan Estimated Aggregates 1993-1995 Bank of England (tonnes)			
Bank of England Survey	Dec. 1993	June 1995	Dec. 1995
Deposits	1,500	3,100	3,410
Swaps	400	600	660
Bank of England Total	1,900	3,700	4,070

HOW ADEQUATE WERE THESE BANK OF ENGLAND ESTIMATES?

The question we now face is, how adequate was the Bank of England's window on the world of gold lending in these two surveys discussed publicly in 1994 and 1995?

We have three sources of information regarding the basis for the above discussed estimates of outstanding gold loans by the Bank of England:

- 1) The texts of Mr. Smeeton's public statements.
- 2) Several conversations with Mr. Smeeton.
- 3) Statements made by dealers who cooperated with the Bank of England in this regard.

From these we conclude the following. The Bank of England based these estimates on information on gold transactions through the London market and on surveys of deposit/loan positions of the bullion banks that it regulates in its role as supervisor of the London bullion market. The 14 principal market-making bullion banks in the city of London were the principal source of information behind these estimates. Some effort was made to estimate gold loan positions in financial centers outside London. However, no allowance was made for any gold deposit or loan positions in Switzerland.

We believe that Bank of England estimates seriously understate global gold deposit/loan aggregates for two reasons. First, the Bank has good information on gold positions only to the degree that the London bullion bankers it regulates provide it with relevant information. Second, central bankers tend to be conservative; any estimates the Bank of England made of positions that lay outside their direct purview would tend to suffer from errors of omission. Switzerland is a major center of gold bullion deposit/loan intermediation and the exclusion of Swiss positions must be a serious source of underestimation.

To appreciate the potential for such underestimation on the Bank of England's part, we would like to point out two relevant facts. First, the 14 market-making bullion dealers in London at the time were, for the most part, global firms with very significant operations outside London that may not have been very visible to the Bank of England. Second, and of greater importance, these 14 principal market-making bullion bankers in the city of London are only a minority of the world's major gold deposit taking institutions.

Of the 14 members of the LBMA, not all of them reported their global books. Possibly most of the dealers whose principal domicile is outside the United Kingdom reported only their London books.

Of the 14 members of the London Bullion Market Association (LBMA) with whom the Bank of England is most familiar, not all of them reported their global books to the Bank when its surveys were done; some reported only their London book and did not disclose the positions on the books of their branches in New York, Zurich, Frankfurt, Hong Kong, Sydney or Toronto. We presume that most, if not all, of the British banks under the jurisdiction of the Bank of England reported their global books. However, we have evidence that some, and possibly most, of the dealers whose principal domicile is outside the United Kingdom, reported only their London books.

This would imply that the Bank of England may have seen only 75% or less of the total global book of these 14 institutions.

These institutions have several incentives to maintain most of their book outside London: Their principal staffing and operations are outside London; they have to post less regulatory capital for positions outside London; and they tend to be subject to less regulation outside London. Based on our feel of the situation, we would not be surprised if almost half the LBMA members did not report their positions outside London and that, for this group, more than half of their positions are booked abroad.

The Bank of England's best information encompasses only the 14 principal bullion market makers in the city of London. We have identified 23 additional dealers who are widely believed to accept central bank deposits or swaps. To provide the reader with a flavor of the relative importance of these other dealers, we list the 14 LBMA members

and set against them a list of the other global players in the gold intermediation business. As one can see, this latter list constitutes an impressive grouping of the “heavyweights” in global finance.

We have identified 23 additional dealers who accept central bank deposits or swaps. This list constitutes an impressive grouping of the “heavyweights” in global finance.

London Bullion Market Association vs. Others	
LBMA	Others
AIG J. Aron	ABN AMRO Bankers Trust CIBC
Barclays Chase	Citibank Commerzbank
Credit Suisse Lehman	Credit Lyonnais Rouse Deutsche Bank
Midland Montagu Mocatta	DG Bank Dresdner
Morgan Guaranty N.M. Rothschild	Indo Suez Macquarrie
Phibro Republic	Merrill Lynch Mitsui
Sharps Pixley UBS	Morgan Stanley Paribas
	Royal Bank of Canada Scotia Bank
	Societe General Standard Bank
	Suisse Volksbank Sumitomo
	Swiss Bank Bayerische Vereinsbank

Of these 23 additional bullion dealers who we believe take official bullion deposits and who engage in swaps, two of these – Deutsche Bank and Swiss Bank – are widely believed to be among the most important gold deposit taking institutions in the world. Many are AAA-rated institutions which, we are told, are major players in this business and which have preferred access to official deposits relative to many of the lower rated LBMA market-making members.

Of these 23 bullion dealers, two are widely believed to be among the most important gold deposit taking institutions in the world.

At the same time, several of the 14 LBMA members (in 1995 – there are only 12 members now) are widely regarded as small to medium scale factors in global gold intermediation. *In the opinion of several leading bullion bankers, it is quite possible that the total gold funding from official sector sources of these “other” bullion bankers may have equaled or exceeded that of the 14 LBMA market making members.* Even if it does not, the gold deposits and swaps of these other institutions must have been equal to a significant percentage of the gold intermediation of the LBMA market makers in 1995.

In the opinion of several leading bullion bankers, it is quite possible that the total gold funding from official sector sources of these “other” bullion bankers may have equaled or exceeded that of the 14 LBMA members.

Therefore, we conclude that the Bank of England in its role as supervisor of the bullion bankers in the city of London obtains direct evi-

The Bank of England's failure to reflect deposits and swaps with the bullion banks in Switzerland is a very important omission. We doubt that they appreciate the volume of gold deposits and swaps booked with the other bullion bankers in centers outside London.

dence of gold deposit and loan positions on less than half of the global gold deposit/loan book. To the extent such information was the basis for its estimates of global gold loan aggregates, it is likely to bias these estimates toward significant underestimation. Information obtained from third party sources indicates that the exclusion of gold deposit/loan positions domiciled in Switzerland was, in and of itself, a major omission. Below we provide some guesstimates regarding possible additional gold loan aggregates in Switzerland and other bullion dealing centers. We construe the term "official deposit" very broadly. These guesstimates of official deposits include quasi-official deposits by Arab and other potentates, deposits from central banks in gold producing countries with accumulated mine supply that is not included in official reserves, and the unreported gold trading positions of some official institutions.

Gold Deposit & Loan Estimated Aggregates 1993-1995 Bank of England Survey (tonnes)			
Bank of England Survey	Dec. 1993	June 1995	Dec. 1995
Deposits	1,500	3,100	3,410
Swaps	400	600	660
Bank of England Total	1,900	3,700	4,070
<i>Other Deposits and Swaps</i>			
Switzerland	E600	E900	E1,000
Other Official Deposits	E500	E900	E1,000
Total Official Deposits	E3,000	E5,500	E6,070
Private Deposits	E500	E500	E500
TOTALS	E3,500	E6,000	E6,570

The above discussion of the outstanding volume of gold loan aggregates refers only to official deposits and swaps broadly construed. Ian Cox, in a study for the World Gold Council, reported several hundred tonnes of gold loans sourced from private deposits in Switzerland which would not be covered by the Bank of England survey. We are told that there are substantial private deposits elsewhere that fund gold loans. We understand that most private gold deposits with the world's principal bullion bankers are "unallocated" and that over the years, the vast majority of these deposits have been lent out. We estimated there were an additional 500 tonnes of private gold deposits worldwide that funded gold loans at the end of 1995 and believe this estimate could be too low.

To confirm this judgment, we have made inquiries through third parties into the global gold deposit and swap positions of the world's bullion banks. Such information is highly confidential, but our sources

have uncovered enough instances to convince us that this overall judgment is correct. We understand that a few bullion bankers believe that the prevailing consensus estimates of gold loans outstanding are correct. Most believe that such consensus estimates are too low and that our estimates are in the right direction but are too high. Four important bullion bankers believe our estimates are largely correct and one has opined that our estimates are much too low. Our research indicates that in making such assessments, few bullion bankers appreciate the number of important competitors they have, and most of them overestimate their share of the global market. Given this tendency to overestimate their share of the market, we believe this array of responses of bullion bankers to our projections from Bank of England statements suggests our estimates are very credible.

Inquiries through third parties into global gold deposit and swap positions of bullion banks convince us that there were 3,000 tonnes of official "gold footings" at the beginning of 1994 and 6,000 tonnes by year-end 1995. Total gold loans including those funded by private deposits were 6,500 tonnes at that date.

**GOLD BORROWINGS THAT GREATLY EXCEED
CONSENSUS ESTIMATES IMPLY HIGHER
THAN CONSENSUS ESTIMATES OF
GLOBAL GOLD DEMAND**

This results in the following estimates: There were 3,000 tonnes of official "gold footings" at the beginning of 1994 and 6,000 tonnes by year-end 1995. Total gold deposits and swaps including those funded by private bullion holders were 6,500 tonnes at that latter date. We know that this total increased substantially in the two years since. In the next chapter we will utilize supply/demand balances for 1996 and 1997 to project a global gold loan total of close to 8,000 tonnes by year end 1997.

Global Gold Deposit & Swap Aggregates 1993-1997 (Tonnes)					
	1993	1994	1995	1996	1997
Official	3,000	4,700	6,000	6,700	7,500
Private	500	500	500	500	500
TOTAL	3,500	5,200	6,500	7,200	8,000

Let us now relate the conclusion of this chapter to our analysis of global demand data in Chapter One.

No matter how one interprets the Bank of England data on gold deposits and swaps, they show that net borrowed gold flows in the two years 1994/1995 were more than 2,000 tonnes or more than 1,000 tonnes per annum on average. GFMS found only 350 tonnes per annum of gold borrowings.

Bank of England data show that net borrowed gold flows in the two years 1994/1995 were more than 2,000 tonnes or more than 1,000 tonnes per annum on average. GFMS found only 350 tonnes per annum of gold borrowings. In these much larger borrowed gold flows we find, at a minimum, part of the unreported gold supply that corresponds to the global gold demands that GFMS has failed to capture in its demand data.

In these much larger borrowed gold flows we find, at a minimum, part of the unreported gold supply that corresponds to the global gold demands that GFMS has failed to capture in its demand data.

In effect, our analysis of borrowed gold supply data provides confirmation to the conclusions of Chapter One regarding global gold demand data.

We will elaborate on this simple and incontrovertible conclusion in the following chapter. ♦

RECONSTRUCTING
GOLD SUPPLY / DEMAND
1993 - 1997

We have made two bold and controversial points in Chapters One and Two – gold demand exceeds consensus estimates by 600 tonnes per year and outstanding gold borrowings are more than two times consensus estimates.

Together these two claims paint a very different picture of the gold market. Both these claims will be greeted with great skepticism. For that reason, we are obliged to support them. The following chapter demonstrates how our conclusions about gold demand and borrowing are consistent with everything else we know about the gold market in recent years.

We have decided on the following, unfortunately quite lengthy, chapter for another reason: It provides us with an opportunity to describe to the reader several features of the gold market that intrigue and mystify many. How large really is the supposedly huge over-the-counter gold market? How does the market for borrowed gold work? How big a role do the “funds” play in this market? Who are the other big borrowers in the gold market? Is the shadowy world of gold options important and how does it operate?

In what follows we try to shed light on these topics. Quite frankly, when it comes to gold options, one of the most shadowy aspects of the gold market, we are on quite speculative terrain. However, as the option market is of interest to many and may be quite important, we have decided it is better to give this issue a try rather than ignore it.

Much of this chapter is quite technical. Worse yet, much of it is very tedious going. Therefore, there is a risk that many readers will lose the thread of our story which is just beginning. Only in Chapter Five do the first dramatic implications for the price of gold emerge, and only in Chapter Eleven does the inevitability of dramatic developments over the longer term become apparent.

For this reason, we are closing out this chapter with a section titled “Summing Up,” which recounts all the high points of Chapters Two and Three. We recommend that readers first scan the italicized liner notes of this chapter and only read this final “Summing Up” before proceeding to the chapters that follow. If this first read provokes sufficient interest, the reader can then plow through the entire text.

GETTING IT TO HANG TOGETHER

A host of questions are posed by our new found evidence that global gold loan aggregates were extremely large by 1995. Surveys of gold borrowings have uncovered far fewer gold borrowings, so the question arises, who borrowed so much gold? If our thesis is to be considered plausible, we must also discover who bought so much gold.” Other less obvious problems arise. For example, we will see that a special problem arises in determining why gold borrowings were so large prior to 1994.

Overall, the first part of this chapter tries to reconstruct the dynamics of the 1993-1995 period to accommodate this new found higher level of gold borrowings. In the course of this search, we will discover a vast world of gold trading and gold derivatives that exceed what is visible in the “official” statistics.

The second part of this chapter projects this revised supply/demand balance into the bear market years of 1996 and 1997. From these projections we estimate outstanding gold borrowings were roughly 8,000 tonnes toward the end of 1997. Taking an overview, we identify the major contributing borrowers to this total and draw some conclusions regarding the implications of this analysis for global gold demand and the gold market deficit.

WHO SOLD SO MUCH BORROWED GOLD? THE “FUNDS”

From Bank of England disclosures we have ascertained that the odds are very high that the volume of borrowed gold outstanding at year-end 1995 was at least two or more times consensus estimates.

More striking is the realization that aggregate global gold borrowings increased far more than Gold Fields Mineral Services, Ltd. (GFMS) has estimated in their annual gold reviews. GFMS makes allowance for only 693 tonnes of gold borrowings in the two-year period of 1994-1995. Let us assume that the Bank of England’s estimates of gold deposits and swaps of almost 1,900 tonnes reflected the entire gold loan market in early 1994. Their survey in mid-1995 showed almost a doubling of these deposits and swaps by then. Gold borrowings continued to expand in late 1995. Overall such borrowings would have been perhaps 2,000 tonnes in these two years. This compares to 700 tonnes estimated by GFMS for this same two-year period.

However, we know that the exclusion of Switzerland and a likely underestimate of gold deposits and swaps in other financial centers outside London points to a yet higher borrowed gold flow. In our estimation, this flow over these two years was on the order of 3,000 tonnes.

Surely, our critics will respond, this claim is so totally implausible that it demonstrates that our analysis must be seriously flawed. We can comfortably respond, "Not so." The source of these large gold borrowings in 1994-1995 is not difficult to identify. But to do this, we must first look at another recent revelation on the gold market that has implications that are as astonishing as the implications we have just drawn from the Bank of England's disclosures on gold borrowings.

Early this year the eight LBMA clearing members reported that their daily trading volume was roughly nine times the daily trading volume of New York's Comex – the only important gold market that had been previously transparent to onlookers.

LOCO LONDON: THE VAST WORLD OF OTC GOLD TRADING

Early in 1997, the front page of the London Financial Times carried headlines on a disclosure by the London Bullion Market Association (LBMA) on the volume of gold transactions in the London market. This disclosure truly warranted front page treatment, for its implications were astounding.

The eight¹ LBMA clearing members reported that their January daily trading volume was roughly 37 million ounces or almost 1,200 tonnes per day. Since then, for the year through October, LBMA daily clearing transactions had averaged more than 35 million ounces, or 1,100

London Bullion Market and Comex Clearing Turnover <i>(Daily averages in millions of ounces)</i>		
1997	LBMA	Comex
January	37.2	5.01
February	40.3	4.37
March	36.3	4.50
April	32.1	2.31
May	32.4	3.63
June	32.2	2.499
July	37.0	5.22
August	33.2	3.18
September	34.3	3.41
October	42.0	4.30
AVERAGE	35.7	3.84

¹ The number of LBMA market making members has declined from 14 in 1995 with the departures of Lehman and Phibro. There are only eight LBMA clearing members vs. 12 market-making members.

This recently disclosed data on the trading of the eight LBMA clearing members only encompass the clearing trades between them to settle every day's transactions.

tonnes, which is more than nine times the daily trading volume of New York's Comex – the only important gold market that had been previously transparent to onlookers.

More than nine times Comex trading volume – with a total value of \$12 billion a day – is stunning. The value of daily trading volumes on New York's stock exchange is less than two times this level. How could the supposedly dying world of gold generate such massive daily trading activity?

Value of Daily Transaction Values: Gold vs. Stocks (Billions of Dollars)				
1997	LBMA	Comex	All Gold Markets	NYSE
January	13.2	1.78	14.98	21.80
February	14.0	1.53	15.53	21.42
March	12.8	1.59	14.39	21.40
April	11.1	.80	11.90	19.89
May	11.1	1.25	12.35	20.83
June	11.0	.99	11.99	22.39
July	12.0	1.69	13.69	24.42
August	10.7	1.03	11.73	22.75
September	11.1	1.10	12.20	24.33
October	13.6	1.39	14.99	27.21
AVERAGES:	12.0	1.32	13.32	22.64

Many were astonished by this LBMA disclosure. However, what was not sufficiently explained was the fact that the LBMA trading volume is only a very partial window on the global world of over-the-counter gold trading that is done *“loco London.”*

This recently disclosed data on the trading of the eight LBMA clearing members only encompasses the clearing trades between them to settle every day's transactions. Orders to buy and sell gold flood into these eight members every day from producers, large speculators, and, most importantly, all of the other bullion dealers around the world. The 29 non-clearing LBMA bullion banks and broker dealers listed in the prior chapter must all enter trades with the eight LBMA clearing members. There are yet other trading houses all over the world that trade through these OTC clearing houses: Prudential Bache, Dean Witter and Refco in the U.S.; smaller houses across Europe like MKS in Geneva; and lesser known but important dealers in centers like Dubai and Hong Kong. And in Japan, where there is an active gold futures exchange (TOCOM), the many bullion banks active there trade OTC with the eight London clearing members.

The LBMA clearing members net all these incoming buy and sell orders in house first and only transact their net daily positions with one another. In effect, the LBMA trading volumes that are reported are simply the net positions of these LBMA clearing dealers that must be brought to the clearing market. There is a gross volume of trading that is cleared within each house first that far exceeds this figure.

Many LBMA members estimate that their total trading volumes are three to five times the LBMA clearing transactions. That projects a gross trading volume on the London OTC gold market of 3,300-5,500 tonnes daily. This is 27-45 times daily Comex trading volume. Its overall value is on the order of \$36-\$60 billion dollars. That is more than two times the value of daily trading on the New York Stock Exchange and is more than the total value of all common stocks traded every day on all the U.S. equity markets – NYSE, NASDAQ and the smaller exchanges.

Global Gold vs. U.S. Stock Market Transaction Values	
<i>Daily Averages for Jan. '97-Oct. '97 in Billions of Dollars</i>	
Global Gold Markets:	Dollars (Billions)
OTC	36-60
Comex	1.32
TOTAL	37.32-61.32
U.S. Equity Markets:	
NYSE	22.64
NASDAQ	17.85
TOTAL	40.49

It is hard to know what to make of these huge volumes of gold transactions. We know the OTC gold market is full of very short-term forward positions that are continually rolled forward. Such transactions must “inflate” these massive trading volumes. *Nonetheless, there can be no doubt that the global world of gold trading is more vast than anyone imagined.*

This newly disclosed OTC data makes it very clear that the Comex, which heretofore had been the visible market everyone used to size up the gold market, is only a small part of the global gold market. It is hard to know how to compare Comex trading volume data to the LBMA data. There is not the volume of short-term dealer transactions on Comex that one finds on the OTC market. On the other hand, the Comex data is inflated by the incessant scalping trades of the Comex locals. The “real” underlying business in gold on the Comex is probably more than the 2% or 3% of the OTC market that is suggested by comparing transaction volume; however, it is quite likely that it is only 10% or less of this global OTC market.

The eight LBMA clearing members net all these incoming buy and sell orders in house first and only transact their net daily positions with one another.

Many LBMA members estimate that their total trading volumes are three to five times the LBMA clearing transactions.

Gross trading volume on the OTC gold market is on the order of \$36 billion-\$60 billion. This is more than the total value of all common stocks traded every day on all the U.S. stock markets.

There are various types of short-term transactions that inflate these statistics.

Nonetheless, there can be no doubt that the global world of gold trading is more vast than anyone imagined.

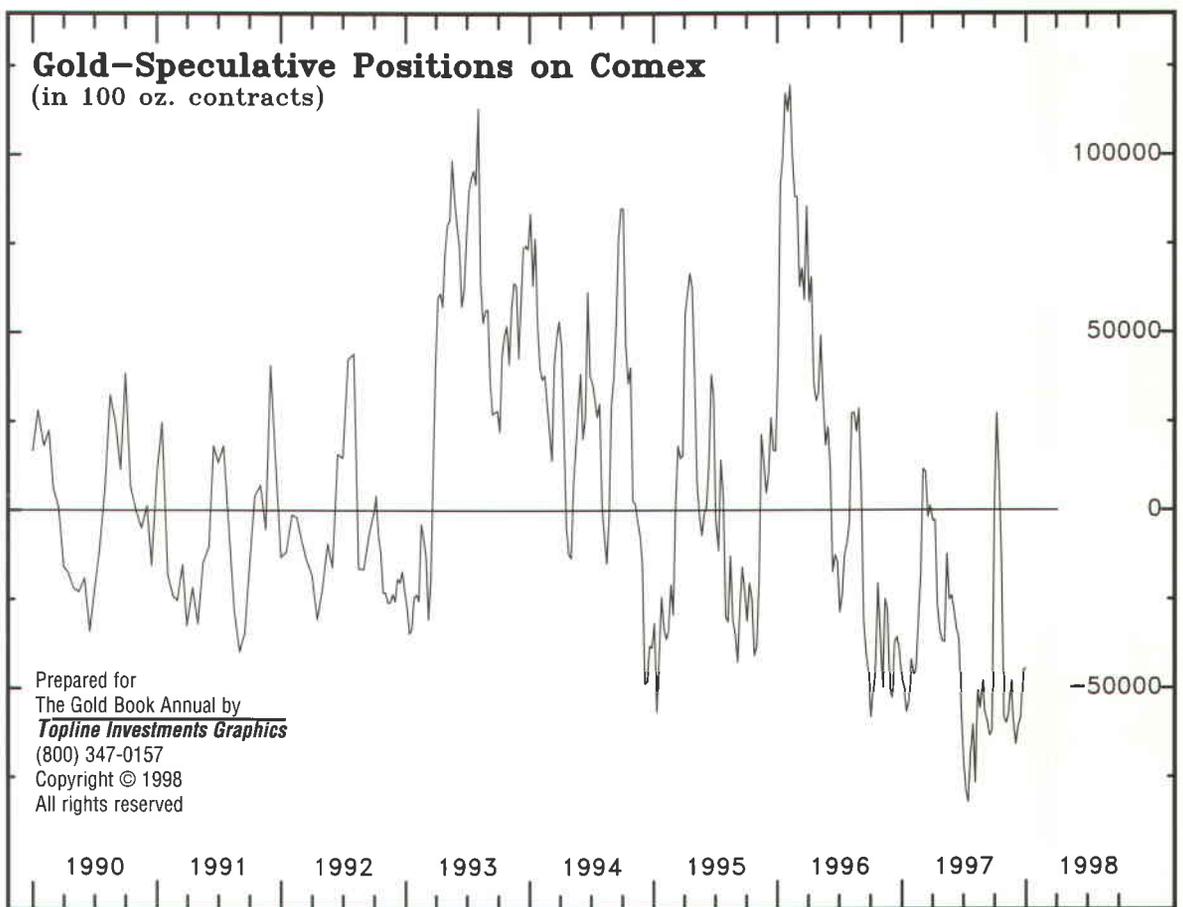
The “real” underlying business in gold on the Comex is probably only 10% or less than this global OTC market.

In 1993, speculators bought gold forwards to a degree which has no precedent. By the end of 1995, they had reversed their position and had gone short. In this swing in the derivative positions of these speculators we can see the source of much of the gold borrowings of 1994-1995.

THE WORLD OF MANAGED FUTURES AND HEDGE FUNDS: SALES BY FUNDS EXPLAIN MOST OF THE UNREPORTED GOLD BORROWINGS OF 1994-1995

In 1993 speculators – largely funds – bought gold forwards to a degree which probably has no precedent, even in the late 1970s. In 1994 and 1995 they had reversed their positions and had gone short.

In this swing in the derivative positions of these speculators we can see the source of much of the gold borrowings of 1994-1995. In what immediately follows, we show how hedge fund and other speculator sales in 1994-1995 account for these large gold borrowings.



Before addressing this issue directly, some words about the futures and forward markets in gold is in order. In most futures and forward markets for commodities, total forward purchases are equal to forward sales. For every short there is a long. It is for this reason that it is often said that commodity markets are a zero sum game.

How, might we ask, do commodity forward markets clear when selling pressures rise relative to buying demands? The answer is quite simple: The forward price moves relative to the spot price of the commodity. In the case of excess selling pressures, the forward price is driven below the spot price. A discount from the spot price dissuades sellers

from selling forward and encourages buyers to purchase forward, thereby bringing forward selling and buying pressures into balance. In the jargon, a forward discount (or “backwardation”) rations forward demands to sell, thereby clearing the market.

It is most important to realize that this is not the way the gold forward market operates. Unlike most commodity markets, there need not be a long for every short in the gold forward market. Why is this? The answer lies in the existence of a large market in borrowed gold. If there are no market participants who want to purchase gold forward, one can still sell gold short by borrowing gold from a central bank and then selling it in the spot market.

It is the existence of the gold lending market that leads to a perennial unbalanced forward book in gold – a book that reflects an excess of forward sales over forward purchases that is equal to a significant share of all gold loans outstanding.²

We must now ask ourselves, what happens in the gold market when there is a sudden increase in speculator purchases of gold through futures and forwards? Remember, in its usual state, the global gold forward market book is net short by an amount equal to the outstanding volume of gold loans used for this purpose. When there is a net increase in forward purchases, these forward purchases are available to finance forward sales. Then, less gold need be borrowed from central banks to fund the global forward book. In this manner, speculator purchases of gold futures and forwards return gold that has been lent into the market back to the lending central banks. And correspondingly, when speculators tire of their long forward positions and sell, gold must be borrowed once again from the central banks to maintain existing forward short positions.

With these forward operations in mind, we can now put forward one all important explanation for the explosion in gold borrowings that occurred in 1994-1995. (As we comment at the end of this section, this explanation may not account for all of these borrowings, but it accounts for most of them.)

In 1993, there was a huge purchase of speculative forward and futures positions in gold. These new forward long positions financed outstanding and incremental gold borrowings in that year. Commodity

Unlike most commodity markets, there need not be a long for every short in the gold forward market. If there are no market participants who want to purchase gold forward, one can still sell gold short by borrowing gold from a central bank and then selling it in the spot market.

In its usual state, the global gold forward market book is net short by an amount equal to the outstanding volume of gold loans used for this purpose. When there is a net increase in forward purchases, these forward purchases are available to finance forward sales. Then, less gold need be borrowed from central banks to fund the global forward book. When speculators tire of their long forward positions and sell, gold must be borrowed once again from the central banks to maintain existing forward short positions.

In 1993, there was a huge purchase of speculative forward and futures positions in gold.

² In addition to gold loans used to create forward sales, there are gold loans that finance mines, gold loans that finance fabricator inventories, and gold loans that finance purchases of securities and other non-gold assets.

What happened in 1994-1995? Speculators went from a long position at year-end 1993 to a flat position by the end of 1995. The reduction in this long position required an equivalent volume of gold borrowings from central banks to maintain the outstanding forward sales in the market.

and Futures Trading Commission (CFTC) data tell us that speculative positions on Comex overall were more than 250 tonnes by year-end 1993, with more than 150 tonnes accounted for by funds. There was a corresponding but vastly larger long forward and call option position established on the larger OTC market. In addition to these OTC positions, there were large purchases of registered gold warrant issues, with a total dealer delta hedge of perhaps 150 tonnes. (See the appendix to this chapter.)

Speculative Positions in Gold, 1993	
Comex	250
(accounted for by funds)	150
OTC (5-10x Comex)	750-1,500
Warrants (delta)	150
Total	1,300-2,050

When we survey all this information, it appears obvious that Comex positions were the tip of the iceberg of global speculative positions. Earlier we stated that OTC trading volumes could be 33-55 times those of Comex. These, we opined, were somewhat inflated, but the “real” volume of OTC transactions was perhaps 10 times those of Comex.

The combination of speculator long positions on Comex, on the OTC forward and call option market, and on the registered warrant market may have resulted in a 1,700-tonne long position in gold derivatives.

Of course, positions and transactions may not be highly correlated; OTC speculative positions may not be 10 times Comex positions. But, it is not unreasonable to assume that global OTC speculative positions are five to 10 times those we see on the Comex. Then, the combination of speculator long positions on Comex, on the OTC forward and call option market, and on the registered warrant market may have resulted in almost a 1,700-tonne long position in gold derivatives.

What happened, then, in 1994-1995? From Comex data we see that the Comex speculators went from a long position of 250 tonnes at year-end 1993 to a short position of 100 tonnes by late 1994 and during much of 1995. The reduction in this long position of 250 tonnes required an equivalent volume of gold borrowings from central banks to maintain the outstanding volume of producer and other forward sales in the market. And of course, late in this period outright short sales of 100 tonnes required yet more gold borrowings.

Almost the entire delta against warrant issues, estimated at 150 tonnes, went off by year-end 1994. And, of greatest importance, the vast OTC speculative positions in forwards and call options, put on in

1993, were largely liquidated in 1994. From what we can tell, OTC speculators reversed their positions from long to short more slowly than the “faster gun” computer funds on Comex. At the very end of 1995, the computer funds on Comex covered their shorts. They had a flat position, which required roughly a 150 tonne decrease in gold borrowings over the period 1993-1995. The small speculators reduced

Change in Speculative Positions in Gold, 1993/1995 (tonnes)			
	1993	1995	Change
Comex	250	50	-200
(accounted for by funds)	150	0	-150
OTC (5-10x Comex)	750-1,500	-50	-800 - -1,500
Warrants (delta)	150	0	-150
Total	1,300-2,050	0	-1,300 - -2,000

their long position from 100 tonnes at the end of 1993 to 50 tonnes by the end of 1995. Because the computer funds were net short during most of late 1994 and throughout 1995, we assume that the OTC funds were probably net short at the end of 1995 to some degree.

Over this two-year period, borrowed gold flows associated with this reversal in Comex and OTC speculator positions and the liquidation of registered warrant issues could have approached 1,700 tonnes. Incredibly, this compares to Western disinvestment of only 122 tonnes in the Gold Fields balances in this same two-year period. If we add the almost 700 tonnes of other (mostly producer related) gold borrowings GFMS was able to identify in 1994-1995 to our 1,700 tonnes estimate of speculator related gold borrowings, we arrive at the 2,400 tonnes of borrowings which is close to our 3,000-tonne estimate arrived at from Bank of England survey data.

We believe that the swing in speculator positions in gold derivatives discussed above can explain most of the huge flows of borrowed gold in 1994/1995. In the following sections of this chapter we will show that fabricators, dealers delta hedging options, and bullion bankers funding non-gold positions contribute importantly to the outstanding volume of gold loans. These three aggregates have been on an uptrend. Probably in 1994-1995 they expanded somewhat. If so, they may account for a modest share of the 3,000 tonnes of gold that was borrowed in these two years. But, overall, we are sure that speculative operations in derivatives were the principal source of these huge borrowed gold flows in those two years.

Over this two-year period, borrowed gold flows associated with this change in speculator positions could have approached 1,700 tonnes.

If we add the almost 700 tonnes of other gold borrowings GFMS was able to identify to our 1,700 estimate we arrive at most of the 3,000 tonnes of borrowings we have extrapolated from Bank of England survey data.

In 1994-1995, total borrowed gold flows approximated 3,000 tonnes, or 1,500 tonnes per year. This is 2,300 tonnes or 1,150 tonnes per annum more than GFMS' estimate of 700 tonnes. For this to have been, we need 1,150 tonnes per annum of offsetting demand. GFMS may understate annual global gold demand and the gold market deficit by 600 tonnes, but not by 1,150 tonnes.

There are a group of central banks, largely Asian, who range-trade the gold market. These central banks have been engaged in long-term programs of accumulating gold reserves which have not been disclosed.

One hypothesis is that range-trading central banks sold more gold into the 1993 rally than GFMS assumes. These positions were repurchased on the pull backs in the gold price in 1994-95.

WHO BOUGHT SO MUCH BORROWED GOLD?

We can explain the huge flows of borrowed gold that appear to have occurred in 1994-1995 in terms of a liquidation in the net speculator forward position. But now we are faced with another problem: Who could have bought so much gold in those two years?

We are assuming that total borrowed gold flows approximated 3,000 tonnes or 1,500 tonnes per year. This is 2,300 tonnes or 1,150 tonnes per annum more than GFMS' estimate of almost 700 tonnes. For this to have been, we need 1,150 tonnes per annum of offsetting demand. Chapter One discussed the fact that GFMS may understate global gold demand and the gold market deficit by 600 tonnes. These unrecorded demands surely absorbed most of these unrecorded supplies of borrowed gold. However, we do not believe that GFMS underestimated global demand and the market deficit by 1,150 tonnes per year.

There are several explanations for this additional buying in these two-years, 1994-1995. First, we believe that there is a group of central-banks, largely Asian, who range-trade the gold market. It is also rumored that these central banks have been engaged in long-term, undisclosed programs of accumulating gold reserves.³

This pattern of undisclosed range-trading and long-term accumulation by certain central banks is actually implicit in Gold Fields' estimates of gross official transactions. For example, on the price lows of 1992 they estimated there were 900 tonnes of gross official sales vs. 300 tonnes of purchases. The latter were largely unreported. In 1993, a year of sharply higher gold prices, they reported more than 600 tonnes of sales, much of which was undisclosed, against very little in the way of gross purchases.

In 1993, we began the year with a market in a deep deficit. Speculators in derivatives went from very short to massively long, adding perhaps 2,000 tonnes of speculative demands to the already large volume of fabrication and bar hoarding demands. A great mystery is why these demands did not result in a much larger increase in the gold price. A large increase in supplies somehow created huge resistance and offset the combination of an excess of physical demands over mine and scrap supply and the quantum increase in

³ For example, in an early 1997 speech before a large audience in New York, senior gold trader Fritz Plass stated it is widely known that China has accumulated 1,000 tonnes of official reserves or more. This compares to their official reserve position of 400 tonnes.

speculative demands. One hypothesis is that range-trading central banks sold more physical gold into the 1993 rally than GFMS assumes.

We might presume these unreported positions that were sold in 1993 were repurchased on the many pull backs in the gold price in 1994-1995. If these banks had been in an overall mode of gold reserve accumulation, they would have bought back more gold in those two years than they sold in 1993. We have no idea what these quantities might be, but such purchases could have been on the order of one or several hundreds of tonnes per annum. That would have absorbed some of the 1,150-tonne average annual flow of borrowed gold supplies in 1994-1995.

There is a second explanation for these especially large purchases of gold in 1994-1995. In Chapter One we explained that the gold jewelry market has unusually high inventories. When the gold market is undergoing trend rates of growth in demand, demand for gold to increase the stock of inventories is very significant. We estimated that it might be 400 tonnes in an average year. At the end of Chapter One we also commented that price elastic global gold demand undergoes significant swings in its growth rate when the gold price moves significantly. Changes in the growth rate of final or end use demand generate corresponding changes in inventory demand.⁴

Let us consider 1993 in this regard. The gold price rose from an average level of \$340 in 1992 to an average level of \$384 in 1993 amidst 3% dollar inflation. We will show in coming chapters that such a rise in the gold price should actually reduce physical, chiefly jewelry, demand. World Gold Council (WGC) data show a small reduction in end use gold demand in that year, after a very large increase in 1992. With negative demand growth, all economic agents involved in the manufacture, distribution and sale of jewelry and other gold products would have tried to reduce their stock of inventories. Inventory demands for gold would then have gone from a significantly positive trend level of 400 tonnes or more to a negative level.

According to WGC, in the two subsequent years, 1994-1995, final global demand for gold products rose more than 10%, thereby resuming a trend rate of growth of 5.0% per annum. At a minimum, trend inventory demands of 400 tonnes a year should have been re-established then, contributing to the 600 tonnes of annual demand in

Such purchases could have been on the order of one or several hundreds of tonnes per annum.

The gold price rose from an average level of \$340 in 1992 to an average level of \$384 in 1993. Such a rise in the gold price should reduce physical demand. The GFMS and WGC data show a small reduction in gold demand in that year.

Inventory demands for gold would have gone to a negative level.

A recovery in inventory demand from an outright negative level back to trend may explain part of the unusually strong demands in 1993-1994.

⁴ These inventory dynamics are discussed in greater detail in the next chapter.

If the forward longs on the global gold derivative book become so large that they equal the number of forward shorts, there would be no role for borrowed gold.

As a result of the speculator forwards that built up in 1993, central bank-funded gold loans were not needed to fund the known gold borrowings in the market.

excess of GFMS' estimates. However, the actual increase in inventory demand probably exceeded that level in 1994-1995. Why? Because inventories were probably being liquidated in 1993. A recovery in inventory demand from outright liquidation to a positive trend rate would have created above trend inventory demands in 1994-1995.

Changes In Gold Demand: GFMS vs WGC			
	1993	1994	1995
Average Gold Price	\$340	\$385	\$384
% Change in U.S. CPI	3.0%	3.0%	3.0%
% Change in Demand (WGC)	-1.7%	-.6%	+10.8%
% Change in Demand (GFMS)	-6.0%	+6.5%	+5.1%

One can see from the above table that the increase in GFMS' estimate of fabrication demand in 1994-1995 was less than WGC's estimated increase in end use demand. Amid very positive end use demand growth, the swing in inventory demands should have caused fabrication demand to grow more rapidly than end use demand. The GFMS data appear anomalous in this regard. It is highly likely that, in 1994-1995, all important inventory demands that were not reflected in GFMS' estimates absorbed some of the large flows of borrowed gold of those two years. We will explain in Chapter Six, that, over the entire 1991-1996 period, this anomaly persists as GFMS' estimates of demand show a growth rate that is well below that of WGC.

WHY WERE GLOBAL GOLD BORROWINGS SO LARGE AT THE END OF 1993?

We have managed to come up with a plausible explanation for the vast gold borrowings that we can see in 1994-1995 from the window provided us by the Bank of England's surveys. And maybe we have accounted for who bought so much borrowed gold in those years. But we face yet another perplexing problem: Why was there such a large (3,000-tonne plus) gold loan position at year-end 1993?

We showed in the last section of this chapter that, when speculative funds go long in the forward market, they finance outstanding forward short positions in the market. If the forward longs on the global gold derivative book become so large that they equal the number of forward shorts, the gold market would resemble a typical commodity market with a long for every short. Under these conditions, there would be no role for borrowed gold. Borrowed gold associated with forward transactions only exists because the global gold derivative book is perennially net short.

At the end of 1993, GFMS estimates that all producer related gold loans were almost 1,500 tonnes. They estimate there were almost 200 tonnes of gold borrowings to delta hedge options at the time. We estimate that all speculator forwards were almost 1,700 tonnes in 1993. Ian Cox (WGC) estimated private gold deposits were several hundred tonnes at the time. It is our guess that they were on the order of 500 tonnes. Therefore, as a result of the speculator forwards that built up in 1993, central bank-funded gold loans were not needed to fund the known gold borrowings in the market. Such central bank funded gold loans should have gone to zero. All the gold borrowed from central banks should have been returned to these banks.

Yet, Bank of England data suggest that official deposits and swaps that fund gold loans were perhaps 3,000 tonnes at the end of 1993. In

Borrowed Gold Positions Year End 1993			
Total Loans		Total Borrowings	
Speculator Forwards	1,700	Producer Hedges	1,500
Official Deposits & Swaps	3,000	GFMS Option Hedges	200
Private Deposits	500	Unidentified Borrowings	3,500
Total Lending	5,200	Total Borrowing	5,200

addition, there were perhaps another 500 tonnes of privately funded gold loans. We must ask, who were the borrowers of these 3,500 tonnes? Surely not speculators, for they were massively long. And we cannot explain this aggregate in terms of producer hedges, for they should have been offset by speculative forward longs. Therefore, the existence of this large official sector gold deposit and swap aggregate suggests that there were other important classes of gold borrowings at the time.

We have three candidates: Fabricator borrowings, general purpose borrowings by bullion banks, and the delta hedge against official sector options. It is widely accepted that fabricator inventories are funded with borrowed gold, usually in the form of consignment stocks. The issue is simply the size of these fabricator borrowings. Ian Cox estimated that fabricator borrowings may have been several hundred tonnes at the time. The existence of a large borrowed gold aggregate at year-end 1993 suggests that this item may be much larger than Cox's estimate.

In fact, it is conceivable that this item was well in excess of 1,000 tonnes. This possibility is suggested by our analysis of inventories of gold jewelry and other products in Chapter One. The gold jewelry

Bank of England data suggest that official deposits and swaps that fund gold loans were perhaps 3,000 tonnes at the end of 1993. There were another 500 tonnes of privately funded gold loans. Who were the borrowers of these 3,500 tonnes?

Fabricator inventories are funded with borrowed gold. Perhaps half of all the fabricator inventories are held by larger firms with access to gold borrowings. If they all financed 50% of their inventories with gold loans, fabricator borrowing might have been 1,600 tonnes at year-end 1993.

industry has an extremely high level of inventories at all stages of the product pipeline equal to perhaps two times final sales. We estimated that, when global fabrication demand is on the order of 4,000 tonnes, there may be 8,000 tonnes or more of retail, wholesale and fabricator inventories.

A second possibility is that the 37 or more bullion banks that accept central bank deposits utilize these borrowings on an unhedged basis to fund general corporate needs. Many instances of gold borrowings for non-gold purposes have come to our attention.

The largest fabricator of gold in the U.S. holds gold in inventory which averages more than 80% of the gold in its annual output of fabricated products. Perhaps half of all fabricator inventories are held by larger firms who have access to gold loans or consignment stock. If, on average, they financed 50% of their inventories with gold loans, fabricator borrowings might have been almost 1,600 tonnes at year-end 1993. We understand that dental fabricators hold inventories equal to one times final sales and finance perhaps 70% of their gold inventories with gold loans. If fabricators of all gold products financed 70% of their inventories with gold loans as the dental fabricators do, or if they provided gold loan financing to some of their retail and wholesale customers, which we believe they sometimes do, the total volume of fabricator gold borrowings could have been 2,000 tonnes.

A second possibility is that the 37 or more bullion banks that accept central bank deposits utilize these borrowings on an unhedged (or less-than-fully hedged) basis to fund general corporate needs. These institutions borrowed Swiss francs in the 1980s to fund their securities portfolios because it was a low cost currency. More recently, they have borrowed yen for the same purposes and with the same rationale. Until recently gold loans cost 1% or less. Many dealers have no doubt perceived less risk of an upside price move in gold than they have in the Swiss franc or that they now see in the Japanese yen. Why not borrow gold as well as Swiss francs and yen to reduce borrowing costs?

We do not have any idea what the total of such gold borrowings might have been at year-end 1993. However, 1,000 tonnes of such borrowings had a value of only \$13 billion at the time, which is a pittance on the combined balance sheets of the 37 leading multi-national bullion banks.

There have been ample hints of such borrowings. Years ago, General Motors discovered the existence of low cost gold loans and tried to borrow gold. Supposedly, the Bank of England dissuaded the bullion banks it regulates from lending against non-gold uses and this prevented a GM gold loan. However, we know from Chapter Two that the Bank of England regulates only the London bullion banks and that they comprise only a part of all the world's bullion banks. General Motors, or any company with a similar motivation, could easily have gone to Zurich or Frankfurt or New York to get its gold loan financing.

It has been rumored that the Australian National Railway sought to finance with gold borrowings. One mining conglomerate we have

encountered financed a base metal project with a gold loan. Another producer considered funding a base metals position with a gold loan. We have even heard of proposed silver borrowings to finance U.K. property developers. One keeps reading about large gold borrowings by Korean banks and conglomerates. It was long believed that these borrowings were motivated by tax considerations and were offset by forward long positions in gold, but recent accounts of the Korean banking crisis suggest these low cost gold loans may have been used to finance Korean won positions and even high-yielding, third world debt securities on a less-than-fully hedged basis.

Given these many instances of gold borrowings for non-gold purposes that have come to our attention, it does not seem implausible that many bullion dealers with access to official gold borrowings have used these low cost gold loans for general corporate purposes or have lent this gold to borrowers for non-gold uses. Some claim that, with the collapse of Drexel Burnham, it appeared that Drexel was funding its securities book with gold borrowings from central banks.

We do not have any idea what the total of such gold borrowings by bullion bankers and their “non-gold” clients might have been at year-end 1993. However, 1,000 tonnes of such borrowings had a value of only \$13 billion at the time. This was a pittance on the combined balance sheets of the 37 leading multi-national bullion banks that we know were recipients of gold funding from central banks.

THE MYSTERIOUS WORLD OF GOLD OPTIONS: OPTIONS ADD TO GLOBAL GOLD BORROWINGS

The identifiable sources of outstanding gold borrowings at year-end 1993 do not end with fabricator borrowings and borrowings by bullion dealers to meet general corporate purposes.

In the gold market central banks sell calls with strikes at or above the prevailing spot price to enhance the return on their gold reserves. Producers purchase gold puts to give them a floor price for their production.⁵ The volume of calls sold vastly exceeds the demand for such calls. The volume of puts bought also probably exceeds their natural sellers, though this is a less significant item. Since there are insuffi-

Central banks sell calls to enhance the return on their gold reserves. Producers purchase gold puts to give them a floor price for their production.

⁵ Some producers sell calls to finance their purchases of puts. Other producers who hedge their production with forwards buy calls to provide some upside exposure to the gold price. Ted Reeve of Scotia McCleod believes that producer call sales significantly exceed producer call purchases. Producers are probably significant net sellers of calls. This net position must be added to the very large net sale of calls by central banks.

Since there are insufficient buyers for these calls in the market place, dealers must purchase most of these calls. They must also sell puts that producers want to buy.

When a dealer purchases gold calls he must offset the risk of his purchase with an offsetting sale. He does this by going short gold.

Dealers must also go short gold to delta hedge the risk associated with the puts they sell.

cient buyers for these calls in the market place, dealers must purchase most of these calls. They must also sell many of these puts that producers want to buy.

When a dealer purchases gold calls he is, in effect, long gold. He usually wishes to have a “balanced book” (or fully hedged position). To do this, he must offset the risk of his call purchase with an offsetting sale. He does this by going short gold against his long call position.

In the OTC gold market, going short involves borrowing gold and selling it into the spot market. The short position required to offset his risk in owning a call is not usually equal to the full value of the call he purchases, and the degree to which he must go short is referred to as his “delta.” The “delta hedging” of such call option exposures varies with the strike price and expiration date of the call option. We refer to such operations in forward markets to cover risk exposure involved in call purchases as dynamic delta hedging.

Dealers also sell puts to producers and others. In selling a put, dealers in effect assume a long position; again, this is a long position they must offset or hedge. In a corresponding fashion, dealers must also go short gold to delta hedge the risk associated with the puts they sell.

The size of the outstanding gold option position and its delta is a subject of great controversy. We have a window on the size of this market – the Comex futures option position. At the end of 1993, outstanding Comex calls were more than 90 million ounces and outstanding puts were more than 40 million ounces. The volume of these options has risen three-fold since then.

Gold Options Year-End Open Interest			
YEAR	PUTS	CALLS	TOTAL
1997	101,985	302,418	404,403
1996	76,525	251,842	328,367
1995	63,703	213,034	276,737
1994	39,172	95,406	134,758
1993	42,492	91,739	134,231
1992	26,018	77,052	103,070
1991	24,856	90,832	115,688
1990	26,154	59,297	84,451
1989	58,301	108,219	166,520
1988	39,137	51,518	90,655
1987	52,172	64,635	116,807

It is estimated by many dealers that the global OTC option book is 10 times the Comex position. As alluded to before, recent LBMA disclosures on the size of the OTC gold market make these estimations very credible. However, we must assume that dealers lay off OTC option positions on the Comex; therefore, to some extent, the Comex options double count OTC options. There is also much double counting within both the OTC and the Comex positions as well. And we can assume that some speculative positions offset some of the central bank and producer option positions, averting the need for dealers to buy calls and sell puts and then delta hedge these option positions with gold borrowings.

The outstanding Comex calls and puts at year-end 1993 had a face value of almost 13.5 million ounces, implying a gross OTC and Comex market total of possibly 10 times this number, or 135 million ounces. This is equivalent to more than 4,000 tonnes of gold. One can only guess how much double counting there might be in this market and how much central bank and producer options are offset by speculative positions. However, we are confident that the global net option position exceeds the Comex position by a significant margin.

We will guesstimate that the net global option book tends to be three times Comex, not 10 times. We believe that producer puts dominate total puts outstanding. To explain our reasoning for this guesstimate, we must fast-forward from year-end 1993 to year-end 1996. We have surveyed outstanding producer puts at year-end 1996. Ted Reeve of Scotia McCleod has estimated producer puts bought by North American producers at 4.3 million ounces. Australian producer puts were roughly the same. Since then, an additional 900,000-ounce put position by one North American producer has been uncovered, both raising the total and suggesting the potential for underestimation of put positions by surveys such as that conducted by Ted Reeve. From what we can tell, the face value of all put positions purchased by South African producers and by producers not included in these three regional groups (e.g. Ashanti) might be equal to those purchased by either the North American or Australian producers.

Overall, we can find total producer puts at year-end 1996 that are almost two times Comex puts outstanding at the same date. We know that central banks and speculators both buy and sell puts. In 1996, speculators were bearish: we assume they were net long gold puts. We have only one window on central bank put behavior: At year-end 1996, Argentina was long almost four million ounces of puts. On a net

It is estimated by many dealers that the global OTC option book is 10 times the Comex position.

There is much double counting within both positions. Some speculative positions offset some of the central bank and producer option positions.

We assume that the net global option book was three times Comex. Such a global book would have had a face value of roughly 1,200 tonnes at year-end 1993.

The average delta against these options is 25%-30%. The resulting delta hedge would, under normal conditions, have been somewhat less than 350 tonnes. The year 1993, however, was not a normal year. The gold price rose from \$330 to \$390. The delta on the calls rose sharply. Delta hedge borrowings against options were possibly 500 tonnes by year-end 1993. This helps explain why there were 3,500 tonnes of borrowed gold outstanding at the end of 1993.

basis, speculator and official sector positions probably added to the net global gold put option positions. Therefore, it is not unreasonable to assume that the net global gold put position outstanding at year-end 1996 was three times the Comex put position. Some dealers, looking at their own option books, believe that this guesstimate is in the ballpark for both the market's put and call positions.

Going back to 1993, a net global gold option book equal to three times Comex would have had a face value of roughly 40 million ounces or more than 1,200 tonnes at that time. Call options would have accounted for more than two-thirds of this total, or 800 tonnes plus. Dealers estimate that, usually, the average delta against these options is 25%-30%. If so, the resulting delta hedge would, under normal conditions, have been less than 350 tonnes.

The year 1993, however, was not a normal year. The gold price rose from \$330 in April to \$390 by the end of the year. Given such a sharp rally, the delta on the outstanding calls rose sharply while the delta on the outstanding puts fell correspondingly. Because the calls were probably three times the puts, the overall delta on the option book must have risen. If it was 350 tonnes when these options were written at \$340 in 1992, the delta hedge borrowings against options were possibly 500 tonnes or more by year-end 1993. This helps explain why there were 3,500 tonnes of borrowed gold outstanding at the end of 1993.

The LBMA data has underscored that there is a vast world of gold derivative positions. The data on these positions in the Gold Fields supply/demand framework are only shadows of this vast reality.

Needless to say, none of these large derivative positions we have been discussing in this chapter are fully reflected in the Gold Fields' balances. GFMS now estimates aggregate net Western investment purchases of gold in 1993 at a paltry 264 tonnes. We estimate that Western purchases of gold derivatives alone increased by perhaps 2,000 tonnes that year. GFMS shows a cumulative delta hedge against options, including producer options, of 160 tonnes plus at year-end 1993, as opposed to our estimate of perhaps 500 tonnes.

For GFMS, the change in this delta hedge in 1993 was a decline of 35 tonnes. This makes absolutely no sense in a market in which the gold price, and therefore the delta hedge against calls, had risen dramatically. Because a few central banks either delivered physical gold against calls or bought back calls in 1993, Gold Fields probably confused change in the face value of these calls with change in their delta and assumed, because the former declined, the latter declined as well.

The LBMA data has underscored what all operators in the gold market have always known: That there is a vast world of gold derivative positions out there and that these positions have been exploding throughout this decade. The data on these vast positions in the Gold Fields supply/demand framework are only shadows of this vast reality, and it is surely a deficiency in the prevailing official statistics.

OFFICIAL SALES AND A FLOOD OF BORROWED GOLD: THE GOLD BEAR MARKET OF 1996-1997

We have tried to reconstruct the gold market's supply/demand dynamics of the years 1993-1995 in a way that reflects the realities of a vast market in which borrowed gold and speculator derivative positions play a far greater role than the "official statistics" portray.

Disclosures by the Bank of England on borrowed gold aggregates gave us special access to the events of these years. Unfortunately, we do not have comparable information for the two years that have followed since. Nonetheless, it is useful to carry this analysis forward to see where the gold market stands today in these respects.

For the year 1996, GFMS showed a gold market deficit of 500 tonnes. We believe that the GFMS demand data understates global demand by roughly 600 tonnes when demand is growing at its 5.0% trend rate. However, 200 tonnes of our underestimation of trend demand by GFMS is inventory demand. According to both the GFMS and WGC, demand did not grow in 1996. Therefore, there may have been no inventory demand. Our best guess is that, in 1996, global gold demand and the gold market deficit exceeded GFMS estimate by roughly 400 tonnes.

Though there was only a small increase in the Comex net speculator short position in that year, a growing conviction that EMU-related central bank selling would depress the gold price encouraged OTC speculative short selling, including gold borrowings used to finance dollar securities to earn a positive carry (the gold/dollar carry trade). There were many reports of these transactions, and they probably account for most of the gold supply that is absent from the GFMS balances for 1996. It is also likely that GFMS underestimated official sales and net producer hedging in that year. (See Appendix II to this Chapter.)

In 1997, official gold flows greatly intensified, as the gold price collapsed amidst booming demand. For the first half of 1997, GFMS esti-

For the year 1996, GFMS showed a gold market deficit of 500 tonnes. It is probable that demand was some 400 tonnes plus higher, as was the gold market's deficit. OTC speculative short selling probably accounts for most of the gold supply that is absent from the GFMS balances.

GFMS points to a deficit of perhaps 1,000 tonnes for all of 1997. Usually we would guess that global gold demand and the deficit would be 600 tonnes higher. However, with so huge a rise in end use demand in 1997, inventory demands were probably above trend. This indicates a market deficit of 1,600 tonnes or more in 1997.

It is widely conceded that there have been large scale official sales throughout the year. However, speculative shorts of various types may have been a principal depressant on the gold market in 1997 as well.

mates that demand rose 18.1%, resulting in a 600-tonne first half deficit. The gold price averaged \$347 in the first half. With the gold price significantly below that level in the third quarter and seasonal second half strength in demand, the odds would normally favor a yet higher deficit in the second half.

However, WGC data on final global gold demand for the third quarter has shown a sharp deceleration in the year-over-year rate of increase, from 14% in the first half to only 6% in the third quarter. This smaller increase in demand growth is entirely attributable to the Far East Asian currency crisis; it is due in large part to dishoarding in Thailand and, to a lesser extent, in some of the Southeast Asian countries. This dishoarding may have abated, but a growing crisis in Korea will no doubt depress fourth quarter demand there. Overall, despite a lower dollar gold price, the Far East Asian currency crisis will reduce the year-over-year growth in global gold demand to perhaps 6% in the second half.

We would expect the 1997 GFMS demand data to show a larger use in global gold demand than the WGC data, since GFMS captures some but not all of the inventory demands at the fabricator and wholesale level in years like 1997 when growth in end-use demand and therefore in inventory demands is well above trend. This points to a GFMS-estimated deficit of perhaps 1,000 tonnes for all of 1997. We would usually guess that global gold demand and the market deficit to have been 600 tonnes higher than GFMS has estimated for 1997. That would imply a deficit in 1997 of 1,600 tonnes.

The data on 1997 is still very sketchy; there has been little in the way of reported net official sector sales, but it is widely conceded that there have been large scale official sales throughout the year. However, 1997 has seen a record net speculative short position on Comex, and it is our opinion that speculative shorts may have been an important, additional depressant on the gold market in 1997. Also, data to date suggest a significant increase in producer hedging. Lastly, rising fabrication demand was accompanied by rising inventories, some of which were probably financed with borrowed gold.

Once again, the principal source of underestimation of supplies by GFMS will probably lie in these several flows of borrowed gold.

Also, data to date suggest a significant increase in producer hedging. Lastly, rising fabrication demand was accompanied by rising inventories, some of which were financed with borrowed gold.

THE IMPLICATION FOR THE GOLD LOAN MARKET

We estimate deficits in the gold market of 900 tonnes in 1996 and 1,600 tonnes in 1997. This implies a flow of borrowed gold of almost 700 tonnes in 1996. It is our guess that more than half the official supplies this past year have taken the form of borrowed gold. This suggests additional gold borrowings since year-end 1995 of roughly 1,500 tonnes, bringing the total of global gold loans from 6,500 tonnes at year-end 1995 to approximately 8,000 tonnes at the end of 1997.

The question immediately arises, *who has borrowed these 8,000 tonnes of gold?*

At the present time, we believe that most producer puts are deep in the money and the total amount of borrowed gold associated with producer hedging must now be close to 3,000 tonnes. Fabricator borrowings are probably in the 1,500-2,000 tonne range. Comex data suggests a three-and-a-half-fold increase in outstanding option positions since the end of 1993. However, because the gold price is so low relative to the recent past, the delta against central bank calls is probably on the low side, and this delta hedge should be less than 500 tonnes.

That leaves us with perhaps 2,500-3,000 tonnes that must be allocated to speculators and bullion banks that borrow for general corporate purposes. Our guess is that half of this total may be attributable to speculative shorts of various kinds. In fact, it is not possible to clearly distinguish between these two classes. For example, gold/dollar carry trades at large commercial banks can be placed in both classifications, depending on whether they are attributable to the bank's proprietary trading operations or to the general funding of the bank's portfolio.

In late 1997, gold loan rates had risen to 4%. Most dealers believe that the gold loan market was tighter than it had ever been. This is not surprising: The growth in gold loan aggregates has been incredible.

It is widely believed that some of the official selling in 1997 had occurred by way of forward sales against reserves and that these reserves will not be completely delivered against these forwards until early 1998. If so, most of the market deficit in the gold market for a time in late 1997 may have corresponded to a flow of borrowed gold. In either case, it is no wonder that gold lease rates have been high by historical standards.

There have been additional gold borrowings of roughly 1,500 tonnes, bringing the total of global gold loans from 6,500 tonnes at year-end 1995 to about 8,000 tonnes at the end of 1997.

Who has borrowed these 8,000 tonnes of gold? Most producer puts are deep in the money. The total amount of borrowed gold associated with producer hedging must now be close to 1,500 tonnes. Fabricator borrowings are probably in the 1,500-2,000 tonne range.

The delta against central bank calls should be less than 500 tonnes. That leaves us with perhaps 2,500-3,000 tonnes that must be allocated to speculators and bullion banks that borrow for general corporate purposes.

In late 1997, gold loan rates had risen to 4%. The gold loan market was tighter than it had ever been. In the past, high lease rates have always encouraged new gold loan supply. Near term new lendable supplies like the Swiss gold will come into the market. Selling central banks which have sold forward against their reserves will deliver their gold and close out their forwards.

Outstanding Gold Loans By Type of Borrower By 1997	
Source	Tonnes
Producer Hedging	3,000
Fabricator Loans	1,800
Delta Hedges Against Call Options	500
Fund Shorts	1,300
Other Borrowings	1,400
Total	8,000

However, if we are correct about the size of the gold loan aggregates, we may not be far from some limitation to gold lending.

Net official sector sales have never exceeded 600 tonnes in any one year. To maintain the "unsustainable" market deficit of 1,600 tonnes at \$300 gold would require annual gold borrowings of 1,000 tonnes.

Many dealers believe that eventually the big central banks like the U.S. and the core European countries will lend gold aggressively. The recent disclosure of Bundesbank gold lending supports this.

In the past, high lease rates have always encouraged new gold loan supply, so that such rises in gold lease rates have proved transitory, even though the demand for borrowed gold kept rising. When central banks have sold forward against their reserves, gold lease rates have fallen once these central banks delivered against their reserves. Both factors are probably responsible for the December 1997 fall in lease rates and they should make late 1997's dramatic rise in lease rates transitory.

Nonetheless, the gold market may not be far from some limitation on gold lending.

First, the central banks that have sold so much this year may have lent most of their gold. To deliver their gold against their forwards, they will have to call their gold loans, placing offsetting pressure on the gold loan market.

Second, if we are correct about the size of the gold loan aggregates, we may be approaching some limit to gold lending. In the past, when we thought that total outstanding gold loans were 4,000-5,000 tonnes, it seemed that, for years to come, the supply of lendable gold would be very elastic. However, at perhaps 8,000 tonnes we are not so sure.

Some contend that the big official gold holders (the U.S., IMF, Germany, France or Italy) will lend out none or only a very limited amount of their gold. Net official sector sales have never exceeded 600 tonnes in any one year. A sustained rate of net official sales in the future of 600 tonnes would be historically very high. To maintain the sustainable current market deficit of 1,600 tonnes would require annual gold borrowings of 1,000 tonnes. If we are right that gold borrowings must now expand at a 1,000 tonne per annum rate to keep the market price at second half 1997 levels, we may not be far from some limitation to gold lending.

A limit to lendable gold supplies may be further off in the future, however, since there are undisclosed official holdings that may have been lent. We have alluded to undisclosed Far Eastern purchases, which may have been lent out. Taiwan, which does not report to the IMF, may lend its gold. And there are Arab potentates who do not report and who may lend their gold. The volume of official gold lent from official holdings recorded with the IMF may be somewhat less than our 7,500-tonne estimate.

More importantly, many dealers believe that eventually the big central banks like the U.S. and the core European countries will lend aggressively. We are now told that, over the last year, the Bundesbank has lent 10% of its gold. Given the prevailing attitudes toward gold by today's younger central bankers, much more aggressive gold lending by the major central banks is a real possibility.

Taking a longer term view, lending too much of the official sector's gold presents serious problems if the central banks are not willing to eventually sell it. There is an end game out there when the central banks will have lent too much of their gold and realize that the short position in the market is too large to be covered. Then the flow of borrowed gold will have to cease. Then the gold price will have to rise. Then the gold borrowers will want to repay their loans. But then their short position will be so large they will be unable to cover it, unless the central banks choose to sell their gold to bail out the shorts.

At that point, a rising gold price, higher gold lease rates, and a growing awareness of gold's positive long run commodity dynamics may make central banks more inclined to hold their remaining gold. Then asset preference may join custom and law to impede such a "cash settlement" between lending central banks and the "shorts" in the market.

The prevailing pessimism in the gold market may encourage sustained central bank sales and sustained short selling by speculators, producers, fabricators, and bullion bankers for several years. But that will simply keep the doomsday machine moving rapidly toward the END GAME. The longer it takes, the more taut the slingshot. We are talking here about a process measured in years, and an outcome describable only in the terms of crisis.

In the final chapter of this book we will return to the official sector and gold, and to this End Game.

In any case, there is an end game out there when the central banks will have lent too much of their gold and realize that the short position in the market is too large to be covered. Then the flow of borrowed gold will have to cease. Then the gold price will have to rise. Then the gold borrowers will want to repay their loans. But then their "short" position will be so large they will not be able to cover it.

SUMMING UP

From Bank of England data we are able to project an astonishingly large volume of outstanding gold borrowings at year-end 1995. The remainder of our analysis was aimed at reconstructing the flows in the gold market in the years 1993 to 1995 in a fashion that was consistent with such a large volume of outstanding gold loans and everything else we know about the market in those years.

What, in essence, do we conclude?

- 1) Outstanding gold loans were on the order of 6,500 tonnes by year-end 1995.
- 2) The total flow of borrowed gold during this two-year period, 1994-1995, was roughly 3,000 tonnes. GFMS can only account for roughly 700 tonnes. This implies additional flows of borrowed gold of 1,150 tonnes or more in each of these two years.
- 3) These additional flows of borrowed gold were chiefly due to a liquidation of vast speculator positions in the forward market from a long position at year-end 1993 to a flat position by year-end 1995.
- 4) Some of this borrowed gold was bought by range-trading central banks that sold the rally in 1993 and have been in the process of undisclosed accumulation of gold reserves.
- 5) A recovery in inventory demands from depressed levels absorbed some of this flow of borrowed gold.
- 6) The bulk of these unidentified borrowed gold flows were absorbed by demand in the physical market that exceeds consensus estimates. In Chapter One, we argued that WGC demand data suggest that global gold demand and the market deficit are probably 600 tonnes higher than GFMS estimates.
- 7) There are five important sources of gold borrowings: (1) producer hedging; (2) dealer delta hedging against central bank call options; (3) fabricator borrowings; (4) speculator shorts and (5) general purpose borrowings by bullion banks. There is no line item in the GFMS balances for fabricator borrowings and general purpose borrowings by bullion banks. The GFMS estimates understate the delta hedge against central bank options.
- 8) Viewed from a longer term perspective, a borrowed gold aggregate by year-end 1995 of roughly 6,500 tonnes, vs. 2,440 tonnes estimated by GFMS, implies 4,000 tonnes of cumulative additional borrowed gold flows into the market. Ten years earlier, in 1985, gold borrowing was in its infancy. The vast portion of this additional cumulative gold borrowing occurred in the 1990s and

has probably been on a rising trend. This corroborates our contention that physical demand has probably exceeded GFMS estimates by 600 tonnes on a sustained basis in recent years.

- 9) Projecting our base case forward into 1996 and 1997, we estimate a gold market deficit of more than 900 tonnes in 1996 and a deficit in 1997 of perhaps 1,600 tonnes. More than half of this cumulative two-year deficit was met by borrowed gold flows. This implies additional gold borrowings of perhaps 1,500 tonnes, bringing the global aggregate to perhaps 8,000 tonnes.
- 10) Current depressed gold price levels are consistent with a sustained annual deficit of 1,600 tonnes or more. Even if one assumes net official sales at the prior peak rate of 600 tonnes per annum, borrowings must persist at a 1,000 tonne annual rate to keep the gold price so depressed. Such volumes of global gold borrowings may be forthcoming, but in time a limit will be reached. Then the flow of official gold will abate. Then the price of gold will rise. Then the shorts will want to cover. But then the aggregate short position will be too big to be covered. In Chapter Eleven we discuss this End Game. ♦

INVENTORY TIDES
AND THE OPTION
HAMMER

A DYNAMIC ANALYSIS OF RESISTANCE AND
SUPPORT IN THE GOLD MARKET

***T**his chapter has two objectives:*

First, it extends our effort to square our estimates of global gold demand, the gold market deficit and the volume of outstanding gold loans with everything we have learned about the gold market in recent years.

Second, it paves the way for the next chapter, where we ask the question, where would the gold price be if there were no flows of official gold? To answer this question we must be able to estimate the response of gold demand to changes in the gold price. There is a widespread belief in the gold market that gold demand is extremely “sensitive” to the gold price, and that, on any significant price rally, gold demand will wither to such an extent that such a rally will not be sustained. This chapter explains the difference between the short run price sensitivity and longer run price elasticity of gold demand.

Also, for better or worse, this chapter takes another shot at explaining the workings of the mysterious gold option market.

Again, this chapter is quite technical. For readers interested in the medium term price dynamics of the gold market, it merits attention. It is of special importance for those readers who are concerned about the alleged extreme “sensitivity” of gold demand to rises in the gold price. For readers interested only in the long run, the italicized summary statements should suffice.

SHORT VS. LONG RUN PRICE “SENSITIVITIES”

In Chapters One and Two, we set forth evidence that the “commodity” deficit in the gold market is far greater than anyone thinks. The significance of this is obvious. Eventually the supplies of official gold must cease. When that happens, the gold price must rise. The larger the commodity deficit in the gold market, the greater the eventual reduction in supplies and the larger the inevitable rise in the gold price.

The price response to an abatement in official gold supplies depends upon the elasticity of gold demand to the gold price. One hears from gold market participants that physical gold demand is extremely sensitive to changes in the gold price.

The price response to such an abatement in gold supplies depends upon the elasticity of gold demand to the gold price. One hears repeatedly from gold market participants that physical gold demand is extremely sensitive to changes in the gold price. From their perspective, gold demand falls off very sharply on any significant rise in the price of gold.

In one sense, these claims of extreme elasticity of gold demand to the gold price are correct. Yet, in another sense, they are greatly exaggerated. How, we may ask, can both of these contentions be correct? The answer lies in an extreme divergence between gold’s apparent short run elasticity of demand and its underlying long run price elasticity. Before we go on to consider how high the gold price will rise when official supplies eventually abate, we must first understand the apparent extreme short run price elasticity of the demand for gold.

In Chapters One and Three we discussed repeatedly the short run dynamics in the gold market. In Chapter One we touched upon inventory dynamics. In Chapter Three, in attempting to reconstruct events in the gold market in the years 1993-1995, we discussed the dynamics associated with option delta hedging. Explaining the short run price “sensitivity” of the gold market provides us an opportunity to elaborate on these dynamics that govern the gold price over the short-term. We will see that the dynamics of resistance and support in the gold market are quite unique, and that they help explain the extremely low price volatility in gold that prevailed in the years 1994-1996. These dynamics of price resistance will play an important role in shaping the path the gold price will take in the coming gold bull market.

INVENTORY DYNAMICS

In Chapter One we stated that inventories in the physical gold market, particularly in the jewelry industry, were unusually high, and we explained why that is the case.

Extremely high inventory levels create extremely large inventory demands and changes in those demands. Along the high 5% per annum trend path of gold demand, large inventory levels lead to large average annual inventory demands. When growth in final demand for gold falls below trend (but remains positive), there is an outright decline in the demand for gold needed to keep growth in gold inventories in line with final demand growth. *It is important to realize that these changes in inventory demands can become quite negative even if final demand growth only slows but remains positive.*

It is useful to examine the comparable inventory dynamics in the macroeconomy. First, for many readers these inventory dynamics will be familiar and will illustrate clearly the comparable mechanisms in the gold market. Second, by looking at inventory dynamics in the macroeconomy we can see by comparison how unusually large they are in the gold market.

Let us assume a typical late cycle in the U.S. economy. Final demand is growing above trend at 4%. Economic agents desire to maintain a constant inventory to sales ratio. Consequently, the stock of inventories is growing at a 4% rate as well. In today's U.S. economy, total demand is \$8 trillion. Manufactured goods demand is \$2 trillion. The stock of inventories is \$1.2 trillion; that is equal to 15% of total final demand and 60% of final sales demand for non-farm goods. The annual increase in inventories is \$48 billion. That is equal to .6% of final demand.

Let us suppose the Fed finds 4% economic growth too far above the economy's 2.5% trend. It tightens monetary policy. Final demand growth falls, perhaps a bit too much, to zero. What happens to inventories?

When final demand growth was 4%, the stock of inventories was rising at a 4% or a \$48 billion annual rate. Now, with no growth in final sales, businesses desire no growth in inventories. If businesses make

In Chapter One, we stated that inventories in the physical gold market were unusually high, and we explained why that is the case. High inventory levels create large inventory demands. Along the very high, 5% per annum trend path of gold demand, high inventory levels lead to large average annual inventory demands. When demand growth falls below trend, these large inventory demands fall as well.

It is important to realize that these changes in inventory demands can become quite negative even if final demand growth only slows, but remains positive.

this adjustment in a year, inventory demand falls by \$48 billion annually, or .6% of Gross Domestic Product (GDP). Even though final demand holds steady, the decline in inventory demand creates a .6% decline in total demand and output over a year – which constitutes a mild recession.

If businesses make this adjustment in six months, not a year, GDP falls by 1.2% over six months; a briefer but somewhat deeper recession ensues. We can see then how inventory demands swing more violently than final demand and can lead to business cycle fluctuations.

The larger the stock of inventories, the more variable will be the overall business cycle. For the U.S. economy, inventories are only 15% of total final demand. But for the gold market, we estimated they are 200% of final demand. Let us assume a hypothetical economy where, like the gold market, inventories are more than 13 times those of the current U.S. economy at 200% of final demand.

Gold inventories and their dynamics are more than three times those of all industrial goods. Take oil for example. Oil is a bulky liquid that is costly to store. Inventories are, consequently, quite low, and oil inventory dynamics are correspondingly low. Oil analysts focus on inventory dynamics, yet gold analysts never discuss inventory dynamics. Why? Gold jewelry has huge inventory levels and huge inventory dynamics. As gold jewelry accounts for roughly 80% of global gold demand, the market overall has comparably large inventory levels and dynamics. Yet people continue to look at gold as an asset market, when, in reality, it has become a jewelry market.

When this \$8 trillion economy with its \$16 trillion in inventories is growing at 4%, inventory demand is \$640 billion or 8% of GDP. If final demand growth falls to zero and firms desire zero growth in the stock of inventories, inventory demand will fall by \$640 billion. If this occurs over 12 months, GDP will fall by 8%. Without an outright decline in final demand and without any multiplier effects, a deep depression ensues, exceeded in U.S. history only by the Great Depression of 1929-1933.

This comparison illustrates 1) how unusually high gold inventories are relative to gold product sales compared to everything else in the economy and 2) how large inventory dynamics are in the gold market.

Gold inventories and their dynamics are more than three times those of all manufactured goods and they are yet greater relative to many other commodities. Take oil for example. Oil is a low-value, bulky liquid that is costly to store. Inventories are, consequently, quite low, and oil inventory dynamics are correspondingly low.

It is ironic that oil analysts discuss inventory dynamics in oil, yet gold analysts never discuss inventory dynamics in gold. The reason of course is simple. Gold jewelry has huge inventory levels and huge inventory dynamics. As gold jewelry accounts for roughly 80% of global gold demand, the gold market overall has comparably large inventory levels and dynamics. *Yet people continue to look at gold as an asset market, when, in reality, it has become a jewelry market where inventory dynamics are extremely important.*

Gold has a high long run price elasticity of demand when compared to other commodities. This causes the growth rate of gold demand to vary significantly in response to moderate changes in the real gold price.

There is a second, all-important reason why inventory dynamics are huge in the gold market. Because its principal use is jewelry, gold demand has a higher long run price elasticity of demand than other commodities. (This and several subsequent points take some elaboration, which is laid out in the following chapters.)

This relatively high price elasticity causes the growth rate of gold demand to vary significantly in response to moderate changes in the gold price. For example, in a year such as 1993 characterized by average global economic growth of 3.5% to 4%, a U.S. inflation rate of 3% and a stable dollar, an 11% rise in the nominal dollar gold price will reduce global gold demand growth from its trend rate of 5% to zero. As we illustrated in Chapter One, given the very high inventory levels in the gold product pipeline, this fairly small price rise causes a 400-tonne decline in inventory demand, which is equal to 10% of global final sales of gold products.

It is useful to compare this aspect of the gold market to the oil market. Oil is a very price inelastic commodity. Average annual price fluctuations of 15% to 20% per year have little discernible impact on the rate of growth of global oil demand. In 1973-1974, the oil price quadrupled and oil demand growth did not turn significantly negative. If the growth rate of oil demand and hence the growth rate of desired oil inventories changes imperceptibly on an 11% rise in the oil price, there will be no perceptible change in inventory demand. In fact, given the overall price inelasticity of oil demand and the low level of oil inventories relative to final sales, it is hard to imagine a price increase that would generate a decline in oil inventory demand equal to 10% of sales – a decline that a mere 11% nominal price rise will create in the gold market. Again, the gold market acts in this respect more like a jewelry market than a commodity market.

One last point is in order: *Such changes in inventory demand, though large, tend to be transitory.* Once a higher gold price rations gold demand (in ounces) down to a lower level, gold product demand will resume its trend rate of growth of 5% if the real gold price stabilizes. The desired stock of gold inventories will then rise in tandem with final sales and inventory demand will resurface at close to its former rate.

Such fluctuations in inventory demands are shocking in their magnitude. A mere 11% nominal rise in the gold price drops global gold demand by 10% in one year, only to be followed by a comparable increase in the next year. Annual nominal gold price changes of two

An 11% rise in the nominal dollar gold price will reduce global gold demand growth from its trend rate of 5% to zero. This fairly small price rise causes a 400-tonne decline in inventory demand, which is equal to 10% of global final sales.

Such changes in inventory demand, though large, tend to be transitory. Once a higher gold price rations gold demand (in ounces) down to a lower level, gold product demand will resume its trend rate of growth of 5% if the real gold price stabilizes. Gold inventories will then rise in tandem with final sales and inventory demand will resurface at its former rate.

This large response of inventory demand to changes in the gold price is the basis for the widespread belief that gold demand is extremely sensitive to changes in the gold price. Strictly speaking, this sensitivity is not a price elasticity; instead, it is a transitory fluctuation in inventory demand.

to three times this magnitude have occurred historically, including this past year, 1997; the swings in inventory demands they generated were comparably larger.

It is this shockingly large response of inventory demand to changes in the gold price that is the basis for the widespread belief that gold demand is extremely sensitive to changes in the gold price. *However, strictly speaking, this sensitivity is not a price elasticity; instead, it is a transitory fluctuation in inventory demand.* That makes it a one time and not a recurring event.

SHORT RUN PRICE ELASTICITY: BARGAIN BUYING AND STICKER SHOCK

The above described inventory dynamics probably explain most of the price sensitivity stressed by so many market participants. However, there is also a short run transitory price sensitivity at the level of final demand that exists above and beyond gold's long run price elasticity.

There is also a short run price sensitivity at the level of final demand that exists above and beyond gold's long run price elasticity.

In any goods market, it is important to distinguish between short run and long run elasticities of demand with respect to price. Sharp rises or declines in the price of any goods produce sharp fluctuations in demand that persist for short periods.

The auto industry is a case in point: Often, as auto sales crest late in a business cycle after pent up demands from the last recession are completely filled, auto companies will resort to steep price discounts via incentives. Short run demand surges in response to these price cuts, but demand soon falls below trend as these incentives prove to have stolen sales from the future. Similarly, steep price increases instituted by auto companies when times are booming often generate a sharp sticker shock abatement in sales. However, over time consumers get used to the higher prices and their aging vehicles force them back to the auto showrooms.

If one steps back from these very short run perturbations in demand, we see a stable trend in auto sales from business cycle to business cycle. There are large swings in auto sales from booms to recessions but, apart from these cyclical variations in demand, the demand trend from one expansion phase to another is quite stable. Over many decades, auto sales have tended to grow somewhat more rapidly than household incomes as growing affluence has allowed households to own more cars per family. On average, households have been willing

to spend somewhat more of their budgets on autos each year, and it is this slowly rising budget constraint that has determined the trend in overall auto demand.

Short run price rises, by creating “sticker shock,” cause households to defer purchases and thereby reduce the share of their budget they spend on autos over the short run. Over the long run, however, their purchases revert to a mean that reflects an overall rising budget preference or constraint.

The market for gold jewelry behaves very much like the auto market. Over the long run, households tend to spend a certain percentage of their incomes on gold jewelry. This percentage rises slowly as they grow more affluent. When faced with sharp price increases, sticker shock sets in and demand backs off temporarily. Similarly, when prices fall sharply, they perceive a bargain and buy for tomorrow’s needs as well as today’s. Over time, households get used to the higher or lower prices and they resume their prior rate of expenditure that reflects their slowly rising budget constraint or preference for gold jewelry.

Short run fluctuations in final demand for gold products in response to sharp price changes are amplified by short run changes in inventory preferences at the level of the gold fabricator and distributor. Like households, these “commercials” defer purchases when faced with an unanticipated price rise and resort to bargain buying when confronted with a sharp price decline.

To some degree, such inventory behavior by firms contrasts with the “price trend following” inventory behavior exhibited by U.S. firms in the 1970s, when inventory demands rose as goods prices rose. We attribute this very different contra-cyclical pattern of inventory behavior by the global jewelry industry to a value driven approach to inventory purchases by the industry’s all important Middle East and Far East Asian participants.

The combination of these short run changes in demand by both households and commercials when faced with sharp price fluctuations contributes to the much discussed short run price sensitivity or elasticity of demand for gold. Unlike gold’s long run price elasticity, this short run price elasticity of demand is transitory. Over the longer run, commercials revert to average levels of inventory relative to sales

Over the long run, households tend to spend a certain percentage of their incomes on gold jewelry. This percentage rises slowly as they grow more affluent. When faced with sharp price increases, sticker shock sets in and demand backs off temporarily.

Similarly, when prices fall sharply, they perceive a bargain and buy for tomorrow’s needs as well as today’s. Over time, households get used to the higher or lower prices, and they resume the prior rate of expenditure that reflects their slowly rising budget constraint for gold jewelry.

Like households, in the gold market “commercials” defer purchases when faced with an unanticipated price rise and resort to bargain buying when confronted with a sharp price decline.

This short run price elasticity of demand is transitory. Over the longer run, commercials revert to average levels of inventory relative to sales, and households revert to a rate of expenditure dictated by their overall income and their budget constraint.

and households revert to a rate of expenditure dictated by their overall income and their budget constraint or preference. It is this latter factor – household income and a budget constraint – that determines sustainable changes in end use demands for gold.

THE OPTION HAMMER

In Chapter Three we discussed the existence of a large unbalanced option position in the gold market which requires a dealer delta hedge of borrowed gold. Over the last several years, the option position in the gold market has more than doubled. The dealer delta hedging of this huge option position provides resistance to price advances and support on price declines. In effect, it amplifies the dynamics of price resistance and support generated by:

- 1) gold's long run elasticity of demand,
- 2) its yet greater short run elasticity of demand, and more importantly,
- 3) the huge inventory dynamics that these price elasticities set in motion.

It is worthwhile to amplify upon the option-related delta hedging dynamics discussed in Chapter Three to fully appreciate the magnitude of these many dynamics of price resistance and support acting in concert.

First, we should focus on the structure of the option position in the market. Comex data suggests that call options are several times put options, and dealers suggest a similar relationship prevails on the OTC market. The calls are sold primarily by central banks. The puts are purchased primarily by producers.

Dealers sell gold short to delta hedge the net call position they buy from central banks. This call-related short position rises as the gold price increases and falls as the gold price declines. Dealers also sell gold short to delta hedge the put position they sell to producers. However, in this case this put-related short position falls as the gold price increases and rises as the gold price falls.

Therefore, when the gold price fluctuates around a prior stable trading range, these two dealer operations with borrowed gold tend to be offsetting. If the sizes of the outstanding net call and put positions were exactly the same, these two operations would be almost completely offsetting. However, the net call position in the gold market is

The option position in the gold market is huge. Gold dealers buy gold call options from central banks and delta hedge their risk by selling borrowed gold.

Dealers sell gold short to delta hedge the net call position they buy from central banks. This call-related short position rises as the gold price increases and falls as the gold price declines. Dealers also sell gold short to delta hedge the put position they sell to producers. However, in this case this put-related short position falls as the gold price increases and rises as the gold price falls.

several times the net put position. Correspondingly, so are the dealer's delta hedges. Therefore, during periods when the gold price trades in a narrow range, as it did in 1994-1996, when the gold price rises, increases in dealer short sales against the outstanding call position exceed reductions in dealer short sales against the outstanding put position. As a result, the dealer delta hedging of the market's outstanding option position tends to create net supplies of borrowed gold on rises in the gold price.

Such dynamics do not always prevail. In 1997 the gold price broke sharply to the downside from its narrow 1994-1996 trading range of \$375 to \$400. Once the gold price fell rapidly and sharply below the bottom end of this range, the delta on the outstanding net call position went close to zero. At the same time the delta on the put position went toward 100%. Then, the flows of borrowed gold associated with dealer delta hedging of the market's option position was dominated by the delta hedge against the put position. On rallies off deep declines, dealers reduced their considerable short positions against in-the-money put options; at the same time, because the outstanding calls were so far out of the money, there was not an offsetting increase in short positions against the market's net call position.

Such periods, however, do not last long. The central bank call options in the OTC market tend to have maturities of several months to perhaps a year. They expire and get rewritten at a strike price that is close to the prevailing market price. When this happens, the dealers must increase their delta hedge borrowings against these newly reinstated call positions. Once again, on any gold price rise, dealer delta hedging of the market's outstanding call position creates a considerable flow of borrowed gold supplies that *more than offsets* the reduction in such borrowings generated by dealer delta hedging of the market's outstanding put position.

Because of these delta hedge dynamics, when the gold price trades well below prior past price levels, such as in 1997, the delta hedging of the option structure in the market has little impact on borrowed gold supplies and on the gold price. However, eventually, on any rally, the market enters a zone in which this dealer delta hedge activity generates significant borrowed gold flows. These flows recur with every incremental rise in the gold price. The outstanding structure of the option position in the gold market causes the delta hedging dealers to "hammer" the gold market with large supplies of borrowed gold as the gold price advances.

The net call position in the gold market is several times the net put position. When the gold price rises, increases in dealer short sales against the outstanding call position exceed reductions in dealer short sales against the outstanding put position. As a result, the dealer delta hedging of the market's outstanding option position tends to create net supplies of borrowed gold on rises in the gold price.

Because of these complex delta hedge dynamics, the market enters a zone on any rally in which a rising delta hedge generates significant borrowed gold flows. These flows recur with every incremental rise in the gold price. The outstanding structure of the huge option position in the gold market causes the delta hedging dealers to "hammer" the gold market with large supplies of borrowed gold as the gold price advances.

How large is this option hammer? Once again we enter a domain in which we must guess more than estimate. However, as we argued in Chapter Three, a guesstimate at this stage is better than ignoring a possibly important feature of the gold market.

Again, using Comex data as a starting point, we estimated that the net face value of the calls in the gold market at the end of 1993 was perhaps 800 tonnes. It has since roughly tripled to perhaps 2,400 tonnes. The face value of the net puts outstanding is currently about one-third of that of the net call position, or perhaps 800 tonnes. At recent very low gold prices, these puts are mostly deep in the money; the delta hedge on these puts must be very high at \$300 gold – perhaps 90% or so – equal to perhaps 700 tonnes. The delta on the calls must be below average at this low price level – perhaps less than 20%, or 400 tonnes. The overall delta against all options outstanding might be somewhat more than 1,000 tonnes.

What would happen if the gold price rose from \$300 to \$400?

Overall, perhaps 800 tonnes of gold might be borrowed and sold on a scale up to delta hedge these options.

What would happen if the gold price rose to \$400? The delta hedge on the puts would fall sharply. The delta hedge on the calls would rise to perhaps 70% or more than 1,700 tonnes. Overall, perhaps 800 tonnes of gold might be borrowed and sold on a scale up to delta hedge these options. In the early phase of the price rise, the decline in the delta on the puts would offset a rise in the delta on the calls. But above a certain threshold, probably in the low- to mid-\$300s, the delta would start to rise inexorably as the gold price rises.

It must be realized that the option “hammer” constitutes a transitory mechanism of price resistance. If the gold price advances to a higher price range characterized by a higher delta hedge against the option book and then remains there, central bank calls will expire and be rewritten at a higher strike price. Their delta hedge will then decline toward its norm and the increase in the gold borrowings that materialized on the price advance will be repaid.

It must be realized that the option “hammer” constitutes a transitory mechanism of price resistance. In Chapter Three we argued that, as calls written in 1991-1992 above the \$340-\$350 average price of those years were replaced by calls written in 1994-1995 above the average price of \$384-\$387, the requisite delta hedge on the option position declined. In general, if the gold price advances to a higher price range characterized by a higher delta hedge against the option book and then remains there, the delta hedge will decline toward its 25%-30% norm and the increase in the gold borrowings that materialized on the price advance will be repaid.

The above discussion focuses on the option “hammer” that provides resistance to advances in the gold price. Of course, this mechanism works in reverse; when the gold price falls, a decline in the global option book’s delta hedge creates repayments of gold borrowings. This contracts supply and provides a “cushion” or “safety net” to price declines. This happened repeatedly in 1994-1996 when the gold price

found considerable support in the \$375-\$380 range. It is these option-related mechanisms that have led many dealers to opine – correctly – that the large option structure in the gold market contributed to the low price volatility in gold in the 1994-1996 period.

PRICE RESISTANCE AND PRICE SUPPORT

We have identified four mechanisms of price resistance and price support that are unique to the gold market:

- 1) Gold's long run price elasticity of demand, which is relatively high among commodities.
- 2) Gold's short run price elasticity of demand, this may be unusually high among commodities because of the "value" orientation of Far and Mideast commercials.
- 3) Huge inventory dynamics; because gold jewelry has an extremely high inventory to sales ratios.
- 4) The option "hammer" and "safety net," which result from a huge option structure which is unique to the gold market.

If the gold price advances or declines \$50-\$100 within its \$280-\$420 trading range of the 1990s, these four mechanisms can create large, cumulative offsetting supplies and demands.

Quantitatively, 3) and 4) are the most important over the short run. Inventory swings can readily create 500-tonne changes in demand over a one-year time horizon. Option dynamics may create changes in supply that are similar. Mechanisms 3) and 4) are enhanced by mechanisms 1) and 2). But only 1) is permanent; gold's long run elasticity of demand creates a one-time permanent shift in the level of demand before demand resumes its trend rate of growth. Mechanisms 2), 3), and 4) are transitory; their associated changes in demand and supply reverse over a period of a year or two. After price rallies, the one-time sticker shock abatement in demand wears off, delta hedge flows of borrowed gold reverse, and positive inventory demands reappear once overall final demand growth resumes.

The following dynamics explain much of what happened in the gold market in 1993-1995. Massive speculative demands in 1993 were offset by a huge decline in inventory demand, a sticker shock abatement to final demand, and an option hammer. In 1994-1996, as speculative demands went negative, the price was held up in a narrow range by the eventual revival of end use and inventory demands. A declining

We have identified four mechanisms of price resistance and support unique to the gold market:

- 1) *gold's unusually high long run price elasticity of demand,*
- 2) *gold's yet higher short run price elasticity of demand,*
- 3) *huge inventory dynamics,*
- 4) *the option "hammer" and "safety net."*

If the gold price advances or declines \$50-\$100 within its \$280-\$420 trading range of the 1990s, these four mechanisms can create cumulative large supplies and demands that provide resistance on price advances and support on price declines. Mechanisms 2, 3 and 4 are transitory; their associated changes in demand and supply reverse over a period of a year or two.

delta hedge on existing call options offset a tendency toward new selling pressures from growth in the volume of options outstanding. This ever-growing option structure added to the force of the four mechanisms of price resistance and support and contained the gold price in a range that was uniquely narrow for any commodity.

THE MYSTERY OF THE 1997 BEAR MARKET IN GOLD

Given this dynamic structure to the gold market, the bear market of 1996-1997 is something of a mystery. How could the gold price break through these four formidable mechanisms of price support?

The bear market of 1996-1997 is something of a mystery. How could the gold price break through these four formidable mechanisms of price support?

Once the gold price broke below \$370 in early 1997, it entered a lower price zone where put delta hedging equaled or exceeded call delta hedging. Then the option structure in the gold market no longer provided a cushion of support. Then, the gold market was “free wheeling” on the downside as far as option dynamics were concerned.

But gold’s short and long run price elasticities created a huge 14% surge in end use demand on the first half decline in the gold price to \$347. Such a 14% demand increase in turn created a huge rise in inventory demand. Market participants up and down the gold product pipeline no doubt tried to build the huge 8,000-tonne stock of inventories at something close to this 14% plus annual rate.¹ These considerations make us conclude that vast flows of official sales and borrowed gold – much of it unreported – were needed to bring the gold price to its mid-1997 level.

These considerations make us conclude that vast flows of official sales and borrowed gold – much of it unreported – were needed to bring the gold price to its late 1997 levels.

In the second half of 1997, the Asian currency crisis created a shock to end use global gold demand. This explains part of the further decline in the gold price from \$340 plus at mid-year to below \$300 by year-end, but it probably does not explain all of this decline. We must assume that official flows were even more intense in the second half of 1997 than they were in the first half.

Such vast flows, whatever they may be, are simply not sustainable. Therefore, the odds are that, in the short run, the gold price will lift. Because of the *transitory* price resistance created by sticker shock,

¹ This increase in inventory demand is reflected partly in the GFMS-estimated higher (18.2%) increase in fabricated demand relative to WGC’s (14%) increase in end use demand. But clearly GFMS somehow misses most of these fluctuations in inventory demands.

declines in inventory demands, and the option hammer, the eventual price rise should occur in a stepwise fashion. But it should occur.

Longer term, 1,000-tonne per annum flows of official gold consistent with the higher average gold price levels of \$384-\$388 of the 1994-1996 period will eventually draw official stocks to levels that are too low. Then the market will enter into the dynamics of the End Game.

We analyze these dynamics in Chapter Eleven. As the gold market approaches the End Game, the mechanisms of price restraint discussed in this chapter become overwhelmed by forces that eventually drive the gold price above a long run equilibrium that is higher than anyone thinks. ♦

Such vast flows simply are not sustainable. Therefore, the odds are that, in the short run, the gold price will lift. Because of the transitory price resistance created by sticker shock, declines in inventory demands, and the option hammer, the eventual price rise should occur in a stepwise fashion.



CHAPTER 5

WHERE WOULD THE GOLD PRICE BE... IF THERE WERE NO FLOWS OF OFFICIAL GOLD?

***F**or four chapters we have been preoccupied with statistics and technical issues. “So, where’s the beef?”*

The “beef” lies in the implications for the future gold price. In this chapter, we argue that official flows have depressed the gold price by several hundred dollars in recent years and that, when these flows cease, the gold price will rise more than anyone now believes.

All readers should carefully consider this chapter. However, the average reader may choose to skip the final postscript on modeling the gold market.

INTRODUCTION

In Chapter One we laid out two alternative bases for estimating global gold demand. We concluded that the higher of these two estimates, based on World Gold Council data, was more likely to be correct. In fact, it might underestimate global demand.

We inserted these World Gold Council (WGC)-based demand data into the traditional supply/demand framework. Results implied a larger deficit in the gold market by roughly 600 tonnes in the 1994-1996 period. By analyzing Bank of England survey data on borrowed gold flows and visible Comex flows in the derivatives market, we could easily identify vast flows of borrowed gold that caused, and filled, this higher deficit in recent years. If anything, it seemed that the flow of gold from above-ground stocks may exceed even that implied by WGC-based estimates of global gold demand.

In Chapters Three and Four, we demonstrated that these higher values for global demand and the gold market deficit were consistent with many other salient features of the market and with the overall market dynamics of recent years.

At some point the flow of gold from above-ground stocks must abate; these official sector stocks are not inexhaustible and central banks, producers and speculators will reach a limit to their selling long before this point of depletion is reached. Then demand, faced with less supply, will drive the price higher. The greater the deficit in any commodity market – that is, the greater the flow from liquidating stocks – the higher the price will eventually rise.

At some point the flow of gold from above-ground stocks must abate; these official sector stocks, though very large, are not inexhaustible and central banks, producers and speculators will probably reach a self-imposed limit to their selling long before this point of depletion is reached. Then the price of gold will no longer be depressed. Then demand, faced with less supply, will drive the price higher. The greater the deficit in any commodity market – that is, the greater the flow from liquidating stocks – the higher the price will eventually rise.

Given the current bleak mood of the gold market, this possibility of zero net flows of gold from official stocks seems farfetched. Yet that has been the historical norm. From 1972 to 1988, despite the International Monetary Fund (IMF) and Federal Reserve gold auctions, the annual flow of gold from official hoards probably averaged less than 50 tonnes per year. Official sales averaged 10 tonnes per year. Aggregate outstanding gold loans were probably on the order of 1,000 tonnes in 1988. Perhaps 500 tonnes of these borrowings were financed from private hoards, leaving only 500 tonnes that were financed with official sector deposits and swaps. This implies an annual average rate of borrowings of perhaps 30 tonnes per year.¹

¹ Because the gold loan market is a fairly new development, most of these borrowings presumably occurred in the 1980s, with the rate of flow of borrowed gold at its highest level in the late 1980s.

For some time into the future there will be continued official sales and continued supplies of borrowed gold. But there is a good possibility that the official sector in the Far East has begun to buy gold. And many of the past suppliers of borrowed gold are speculative shorts of various types or producers who have overhedged, both of whom may well want to reduce or cover completely their shorts in any gold rally. And, in the very long run (which we discuss in the last chapter of this book), these official flows must completely abate. So despite the prevailing pessimism, we believe it is worthwhile to ask the question, *how high must the gold price go if the net flow of gold from official stocks goes to zero?*

How high must the gold price go if the net flow of gold from official stocks goes to zero?

LONG RUN PRICE ELASTICITY

In the prior chapter we discussed the short run “sensitivities” of gold demand with respect to changes in the gold price. We contrasted short run price elasticity to long run elasticity. It is only this latter factor that determines sustainable changes in end use demands for gold, given changes in the real price of gold.

In what follows we will show that two simple principles dominate gold’s long-term price elasticity: A household budget constraint that determines expenditures on gold jewelry, and the share of gold in the cost of jewelry manufacture, which relates the price elasticity of gold to the unitary price elasticity of items of gold jewelry.

We want to understand where the gold price will go on a sustainable basis when a large change in gold supply occurs. In today’s gold markets, jewelry comprises 80% of final physical demand. To keep things simple, we will focus first only on predominant jewelry demands. At any given level of income, households allocate a certain percent of their income to purchases of gold jewelry. They do not seek to buy ounces; rather they seek to spend a certain amount on jewelry items.

At any given level of income, households allocate a certain percent of their income to purchases of gold jewelry. When the gold price rises, the cost of gold used in the making of jewelry goes up. Fabricators and distributors pass these higher costs on to consumers in the form of higher retail prices. Households adjust, spending the same income but buying fewer ounces.

When the gold price rises, the cost of gold used in the making of jewelry goes up. Fabricators and distributors add a mark-up over their higher costs and pass these higher costs on to consumers in the form of higher retail prices. After the initial sticker shock of somewhat higher prices, households adjust. They spend the same amount of income on gold jewelry as before; they buy fewer or smaller items, or items with lower caratage or hollow cores. In effect, they spend the same income but buy fewer ounces. It is this behavior that determines the long run elasticity of gold demand with respect to price.

We estimate that roughly two-thirds of the cost of all types of gold jewelry taken together is gold.

Fabricators and distributors add their fixed mark-up over their higher gold costs and pass this, and only this, on to the final consumer.

Gold is an expensive material. Much gold jewelry (chain, Indian bangles, crude chuk kam or pure gold jewelry in the Far East, etc.) is quite simple to fabricate. On the other hand, for some adornment jewelry the costs of fabrication are high and gemstones add a material cost to jewelry items that does not vary with the price of gold. On average, we estimate that roughly two-thirds of the cost of all types of gold jewelry taken together is gold; the rest is labor, other materials, and amortized fixed plant and equipment used in its production. In developed markets, gold comprises less than this share of total jewelry costs; in many developing markets, where jewelry is very crudely fabricated, it comprises more. When the price of gold rises, the cost of the gold in total jewelry costs rises, but the labor, amortized plant and equipment, and other materials does not. Fabricators and distributors add their fixed mark-up over their higher gold costs and pass this, and only this, on to the final consumer.

We can perform a small thought experiment to see what a rise in the price of gold does to gold jewelry demand.² Suppose the price of gold rises by 50%. As gold comprises two-thirds of total costs, the price of jewelry will rise by only one-third. If a household previously bought four homogenous jewelry items under its budget constraint, now it can only purchase three such items. In effect, for gold jewelry, a 50% rise in the gold price will reduce demand for physical units by one quarter.

It must be recognized that we are referring in this thought exercise only to increases in the *real* or relative gold price. If there is a general price inflation – if the rise in the gold price is purely nominal and not real – household incomes and the costs of fabricating jewelry would rise by the same percentage as the gold price. There would be no reduction in purchases of jewelry items or in the physical gold they contain.

Let us extend this analysis to the entire gold market. Jewelry comprises 80% of total gold demand. Electronic applications absorb 5% of demand, bar hoarding outside Europe and North America absorbs another 5% or more, and several other diverse applications absorb

² In the present discussion, we resort to a "thought experiment" rather than econometrics to communicate to the reader the most probable estimate of the price elasticity of gold demand, largely because econometric jargon would be bewildering to the wide readership we hope to attract to *The Gold Book Annual*. We know of one econometric estimate of gold jewelry demand by an economist, David Gulley, who worked both as an academic and for the WGC. ("Jewelry Demand and the Price of Gold," R. Batchelor and D. Gulley.) We understand from the WGC that they have commissioned a similar unpublished study which comes to the same conclusion. These studies have greatly influenced our thinking about this subject. The thought experiment above shows quite clearly the range in which the elasticity of gold demand must lie. Our estimate is a bit of a guess, but it is an educated guess. We have found that, in working with historical data, it explains multi-year changes in gold demand given the price and income changes during such periods.

the remainder. These different applications each have their own price elasticities. Electronic demands are very inelastic with respect to price. Bar hoarding is more price elastic than gold jewelry, and the rest is somewhere in between. For simplicity's sake, we can assume that on average the price elasticities of these several applications taken together approximates that of gold jewelry.

In Chapter Two we argued that total annual global gold demand in 1995-1996 was greater than 4,000 tonnes, and gold mine and scrap supply was on the order of 3,000 tonnes. The excess of demand over supply was met by a flow of official gold. What happens when this flow ceases?

We will show later in this chapter that gold mine supply is very inelastic with respect to the gold price in both the short and long run. The elasticities of scrap are more complex, but scrap is much less important overall in the gold supply/demand balance than either demand or mine supply. The bulk of the adjustment to an abatement of official gold supplies occurs by way of a change in demand.

Let us assume first that demand is the only means of adjustment, and address inelastic mine supply and the less significant scrap adjustment later.

Let us suppose that an abatement of official gold flows reduces global gold supply from 4,000 tonnes to 3,000 tonnes per year. Then, the real gold price must rise sufficiently to ration down jewelry and other end use demands for gold by 25%. The same quantity of income that purchased 4,000 tonnes of gold contained in fabricated items will be spent on only 3,000 tonnes. Assuming all gold products approximate gold jewelry, this implies that the average price of a unit of gold product must rise by 33% to meet the household sector's budget constraint. Remembering our simple thought experiment discussed earlier, since gold comprises two-thirds of total jewelry costs, the price of an ounce of gold must rise 50% to result in such a 33% rise in the price of gold fabricated items needed to ration demand down to the new lower level of aggregate supply.

The gold price was \$388 in 1996. Today, that same price in real terms equates to close to \$400 an ounce. If such a 1,000-tonne flow of official gold ceased, after the sticker shock abatements in demand passed, it would take a 50% rise in the price of gold to \$600 an ounce to equilibrate demand with the reduced level of supply.

Global gold demand in 1995-1996 was greater than 4,000 tonnes, and gold mine and scrap supply was on the order of 3,000 tonnes.

Suppose that an abatement of official gold flows reduces global gold demand from 4,000 tonnes to 3,000 tonnes per year. The real gold price must rise sufficiently to ration down end use demands for gold by 25%. The same quantity of income that purchased 4,000 tonnes of gold contained in fabricated items will be spent on only 3,000 tonnes. The average price of a unit of gold jewelry must rise by 33% to meet the household sector's budget constraint. Gold comprises two-thirds of total jewelry costs. The price of an ounce of gold must rise 50% to result in such a 33% rise in the price of gold fabricated items.

The gold price was \$388 in 1996. Today that same price in real terms equates to \$400 an ounce. If the market adjusted mainly by way of a price rationing of demand, the gold price would eventually settle at \$600.

Our current base case assumption is that trend gold demand in 1996 (including trend inventory demands) was roughly 4,150 tonnes. (Refer to Chapters One and Eight for details.) There were 3,000 tonnes of estimated mine and scrap supply. We understand that these estimates are subject to considerable error. But in all probability, the ratio of the gold market's deficit to demand exceeded the 1,000-to-4,000 tonne ratio employed in the above thought experiment. If that is so, we can conclude that, if the liquidation and mobilization of above-ground stocks had ceased and the market had adjusted only by way of a price rationing of demand, the gold price would eventually have settled above \$600.

THE INELASTIC NATURE OF MINE SUPPLY

Of course, the entire adjustment to lower official supplies will not be borne solely by a downward adjustment to price elastic demand. We stated earlier that, for a rise in the real price of gold of 50%, the historical record suggests that there will be little response from mine supply. This requires some documentation.

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It is our view that changes in mine supply result primarily from two types of exogenous developments: New discoveries and technological changes. We see this very clearly in the history of global gold mine output.

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From the accompanying table, it is clear that there were repeated discrete large surges in gold mine production, such as the very obvious ones that occurred in the 19th century with the discovery of gold deposits in western North America, later in western Australia, and later yet in South Africa. As these new found deposits were depleted, mine production then experienced an outright decline until a new major

Global Mine Production 1810-1980	
Decade Ending	Increment in Production
1810	182.0
1820	118.8
1830	145.5
1840	204.4
1850	532.5
1860	208.1
1870	1,900.5
1880	1,759.8
1890	1,629.3
1900	3,160.5
1910	5,742.4
1920	6,419.3
1930	5,790.7
1940	9,818.6
1950	8,886.2
1960	9,779.8
1970	14,006.2
1980	13,247.9

discovery occurred. Technological changes played a role in these new discoveries, since they allowed newly found deposits of ever-lower grades to result in new gold mining booms. These newly discovered

These newly discovered deposits and their depletion appear to be more important than the gold price in determining the course of mine output.

deposits and their depletion appear to be more important than the gold price in determining the course of mine output.

This is apparent in several extended periods in history. For example, new discoveries created a boom in gold mine output in the decade of the 1850s. During the following three decades there was outright general price deflation; the real gold price rose, yet annual mine production fell significantly from depletion of the discoveries of the 1850s.

Decade Ending	Increment in World Mine Production	% Change in Mine Supply	% Change in Real Gold Price Beginning/End of the Decade
1850	532.0		+6.63%
1860	2,008.1	277.5	-4.68%
1870	1,900.0	-5.47	20.75%
1880	1,759.8	-7.4	+17.27%
1890	1,629.3	-7.4	+20.08%

In the early decades of the 20th century, the real gold price declined. This should have curtailed gold mine production. But, instead, gold mine production soared. From what we can tell, it was a technological change – the advent of cyanide extraction – that raised the growth rate of gold mine output.

Decade Ending	Increment in World Mine Production	% Change in Mine Supply	% Change in Real Gold Price Beginning/End of the Decade
1890	1,629.3		+20.08%
1900	3,160.5	+94.0	0.34%
1910	5,742.4	+81.7	-20.39%
1920	6,419.3	+11.8	-54.46%

We see the same departures of gold mine output from its apparent price determinants in the period after the end of the Second World War. In the period through the late 1960s, a sustained significant annual dollar inflation caused the real gold price to fall continuously. However, the increasing exploitation of the South African deposits resulted in a rising trend in gold mine output.

Decade Ending	Increment in World Mine Production	% Change in Mine Supply	% Change in Real Gold Price Beginning/End of the Decade
1950	8,886.2		-50.49%
1960	9,779.8	1.1	-13.81%
1970	14,006.2	42.3	-11.74%

Since 1971, trends in the real gold price and global mine output diverged once again, but in the opposite direction. In this most recent period the real gold price has risen three-fold, yet the annual rate of growth of gold mine output has averaged only 1.8% per annum,

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Since 1971, the real gold price has risen three-fold, yet the annual rate of growth of gold mine output has averaged only 1.8% per annum. This is well below the very long run trend rate of growth of mine output of 2.85%.

roughly half the rate of global Gross Domestic Product (GDP) growth and below the long run trend rate of growth of mine output of 2.85% per annum. (See Chapter Eight for details.)

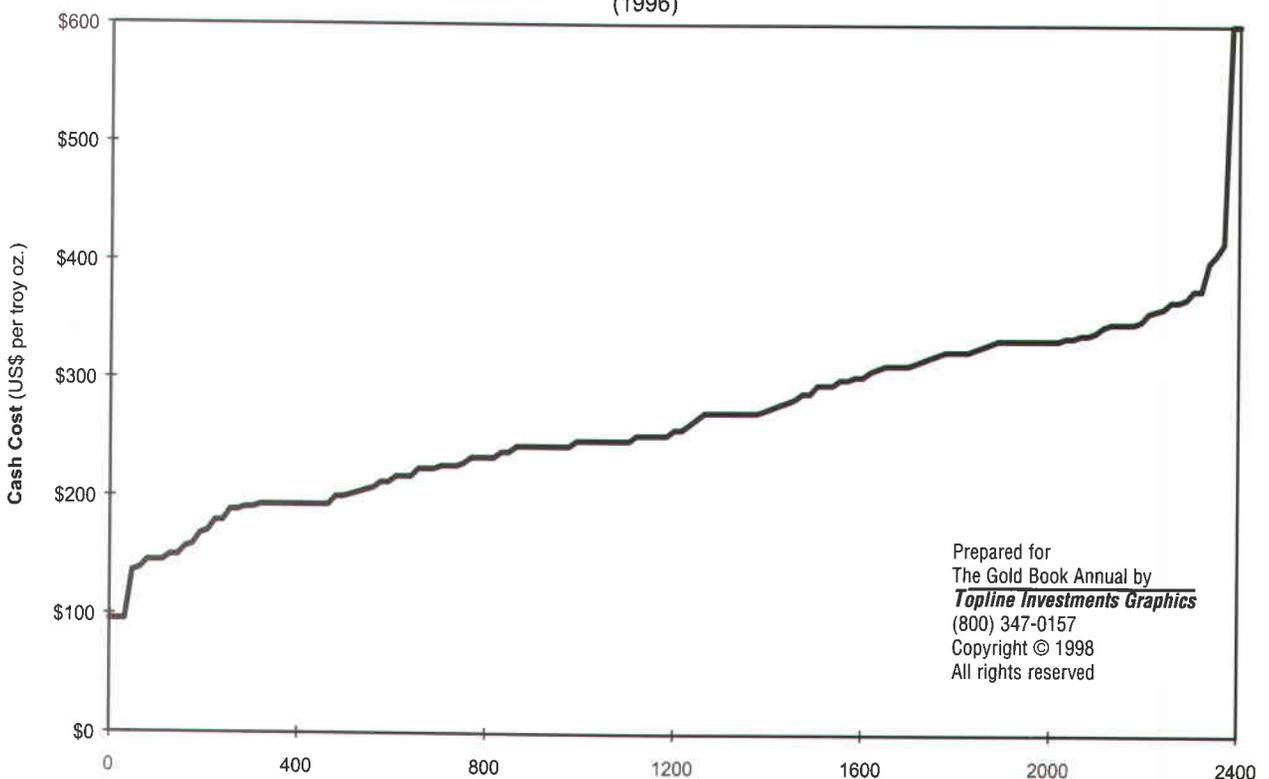
Decade Ending	Increment in World Mine Production	% Change in Mine Supply	% Change in Real Gold Price Beginning/End of the Decade
1970	14,006.2		-11.74%
1980	13,247.9	-5.4	+601.81
1990	15,000.0	13.2	-47.32

To be sure, the 24-fold rise in the nominal dollar gold price from peak to trough from 1972 to early 1980 encouraged exploration. This did result in new discoveries (some of which would have occurred had there been no change in the real gold price). However, the depletion of the South African deposits was so great that South African production fell by 60% from its peak. This decline in output offset new production to such an extent that overall annual growth in mine output during this period of a rising real gold price fell well below its annual growth rate in the prior decades, when the real gold price was declining.

How should we “model” gold mine output with respect to the real gold price? In commodity analysis, we construct a mine supply schedule from all the existing mines in the world, including mines on standby as well as mines in operation. This cost curve embodies the cash costs of production of each mine, since that is the price at which these

In commodity analysis, we construct a mine supply schedule from all the existing mines in the world. This cost curve embodies the cash costs of production of each mine. For each successive increment to global production, there is a higher associated production cost.

Gold Mine Supply Schedule
(1996)



mines, once built, will close down. For each successive increment to global production, there is a higher associated production cost.

The long run equilibrium price of a commodity is its marginal cost; that is, it is the price it takes to keep the highest cost mine in production to meet global demand. Some commodity cost curves are very flat: The incremental cost of production is close to the average cost of production.

This is not the case for gold. In the zone of incremental production needed to meet rising demand, gold's cost curve is very steep or nearly vertical. In effect, either you own a gold mine or you don't. Economic gold deposits are rare. Historically (but not currently), when you find one it is very profitable. There are not a lot of marginal economic mines around that can come into production if the gold price rises. Therefore, a higher gold price does not bring forth a large increase in gold production. This is basically what we mean when we say that gold mine supply is inelastic with respect to price.

If the gold price suddenly rises, mine supply may not rise at all over the short run, since it takes literally years to open new mines or to rehabilitate stand-by mines and bring them into production. Therefore, only after several years is there a production response. However, even then, this response tends to be quite limited. Of course, higher prices do encourage exploration. When new economic deposits are found, they get added to the lower cost portion of the global gold mine cost curve for the future years when they come onstream (which is usually five to 10 years later).

In this manner a higher gold price will increase gold mine production with a very long lag. We saw this happen in the late 1980s. The gold price rose hugely in real terms in the 1970s. Exploration efforts increased and they were successful. But the growth rate of mine supply did not rise sharply until the second half of the 1980s, and even then this increase in gold mine supply lasted for only a half decade or so. Despite a three-fold increase in the real gold price since 1971, the rate of growth of mine supply fell to roughly 1% per annum in the mid-1990s. Even though mine supply growth rose to a 7% annual rate for a while in the late 1980s, this surge in mine supply raised the average 25-year rate of mine supply growth to only 1.8% per annum.

In conclusion, the history of gold mining suggests that changes in the global gold mine cost curve are due less to changes in the gold price

The long run equilibrium price of a commodity is its marginal cost. In the zone of incremental production needed to meet demand, gold's cost curve is very steep. There are not a lot of marginal economic mines around that can come into production if the gold rises. Therefore, a higher gold price does not bring forth a large increase in gold production.

Higher prices do encourage exploration. When new economic deposits are found, they get added to the lower cost portion of the global gold mine cost curve for the future years when they come onstream. However, such new production does not usually come on stream for five to 10 years, and even then this supply response is often not very great.

and more to new discoveries and technological change. Gold mining booms, when they occur, tend to be driven above all by new discoveries. By contrast, rises in the real gold price can have a remarkably limited effect on global gold output, as the late 19th century and the past 25 years attest.

For these several reasons, if the flow of official sector gold abates, mine supply will not meaningfully respond to a higher gold price for at least several years. And it may not respond meaningfully even over a five to 10 year time frame.

SCRAP SUPPLY

Scrap supply is another matter, however, and a complex one at that. We know from past experience that scrap supply would surge on a 50% rise in the real gold price. What is unclear is to what degree the higher level of scrap flow would be sustained.

For a base metal, the trend rate of growth of scrap supply reflects the rate of consumption of that metal 20 to 30 years prior, since that is the average economic life of the goods that incorporate base metals; once these goods fall out of economic use they become available for scrap recovery. Changes in the real price of a base metal have only a transitory effect on scrap supply. This is so because there is a limited well of obsolescent scrap with higher recovery costs that can be tapped at higher metal prices. However, once that well is emptied, the growth in scrap supply falls to a trend determined by prior rates of growth of consumption.

Applying this model to gold, we would expect any surge in gold scrap supply to be largely temporary. However, only a fraction of total gold scrap comes from prior industrial uses. Most gold scrap is old jewelry that is turned in to be made into newer more fashionable jewelry. And much of gold scrap sales represent profit taking by holders of investment jewelry. Sales of investment jewelry as the gold price rises represent a potential supply that exceeds the well of obsolescent scrap that exists in base metals markets. On the other hand, gold scrap that is basically recycled jewelry should be tied to current jewelry consumption, and that actually falls in ounces as the gold price rises.

This is all quite complex, and we are unsure how to model gold scrap behavior. Furthermore, the scrap data is poor and only goes back to 1980, making it difficult to test any model with empirical data. Overall, it is our guess that the surge in scrap supply following a price rise would be largely temporary and that scrap flows would decay to

Scrap supply is another matter. Scrap supply would surge on a 50% rise in the real gold price.

The surge in scrap following a price rise would be largely temporary and scrap flows would decay to some lower trend level over time. Scrap supply influences the long run equilibrium gold price, but only to a limited degree.

some lower trend level over time. Therefore, on balance, we would expect scrap supply responses to a higher gold price to influence the long-run equilibrium gold price, but only to a limited degree.

INVESTMENT DEMAND

Throughout this book we focus on gold's "commodity" demands and de-emphasize Western investment demand. That does not mean we believe there will never be such investment demand. On any price rise, Western trend-following speculative demands always materialize and they will continue to do so. But, we must ask, will Western investment demands become a permanent feature; will long run investment demands contribute to overall long run demands for gold and thereby raise the long run equilibrium gold price?

A century ago, monetary demands for gold accounted for roughly 50% of global gold demand on an ongoing basis. Private hoarding of bars in the West was probably important as well. Both these stocks of gold have been under liquidation in the last decade and a half. However, this process will probably come to an end in the next decade or so. (See Chapter Eleven.) When that occurs, there will be a large increase in the price of gold and a change in perceptions regarding gold's long run real rate of return. (See Chapter Ten.)

An eventual bull market in gold is likely to make market participants aware of gold's positive trend real rate of return. In today's world of financial asset market development, even in emerging countries, gold will probably never assume a major role as either a privately held or an officially held asset. But there is likely to be, at some point, some accumulation of bullion by both private holders in the West and by central banks.

As we stated in the introduction to this book, we can see several developments on the horizon that may revive Western investment demands sooner rather than later. Given the vast portfolios involved, even a very small allocation of portfolios to gold will result in a trend or equilibrium investment demand that is significant relative to the size of the gold market. Therefore, in long run equilibrium, the gold price should be higher than its pure "commodity" price equilibrium.

CONCLUSION

Overall, what should we conclude about an adjustment to today's equilibrium gold price if official flows of gold ceased?

There is likely to be, at some point, some positive accumulation of bullion by both private holders in the West and by central banks. Given even a very small trend level of investment demand, the overall equilibrium gold price should be higher than its "commodity" price equilibrium.

Overall, if official supplies of more than 1,000 tonnes at an annual rate in 1995-1996 had abated, the long run real gold price would have risen to \$600 an ounce in 1997 prices.

- 1) Price rationing of demand for gold in jewelry would account for most of the adjustment to a new higher price equilibrium.
- 2) Increases in mine and scrap supply would also occur, but they would be less significant.
- 3) Over the longer run, on an eventual sustained rise in the real price of gold, there should develop a positive trend level of investment demand from Western investors and central banks. This might offset any moderate increases in mine and scrap supply that would result from the rise in the gold price.
- 4) Therefore, *if official supplies of more than 1,000 tonnes at an annual rate in 1995-1996 had abated, the long run real gold price would have risen to perhaps \$600 an ounce in 1997 prices.*

A POSTSCRIPT ON MODELING GOLD DEMAND

In the preceding text, we set out a “model” of the gold market. It is a commodity “flow supply/flow demand” model. There is an alternative way of modeling the gold market: Gold can be viewed as a portfolio asset in the context of a “portfolio balance” model. Both are extreme simplifications of a more complex reality.

Let us look at an alternative portfolio balance model of the gold market. Eugene Sherman sets one forth in his 1986 book, “Gold, Investment Theory and Application.” This gold pricing model contains five independent variables: Log world liquidity, log U.S. trade weighted exchange rate, a real euro-dollar rate, unanticipated inflation, and a log political tension index. This model treats gold as a stateless currency. Its relative price is the result of changes in its risk-adjusted return vs. the risk-adjusted return of other assets. In essence, the demand for gold and its price are determined by changes in the risk-adjusted returns of alternative currencies.

It is noteworthy that there are no flow supply or flow demand variables in this model. There is no room for any changes in official sales or mine supply nor any changes in global income that might influence jewelry demand. The rationale for such a model is that the stock of above-ground gold is so large relative to flow variables like mine supply or official sales that portfolio balance dynamics overwhelm these flow variables and they can be ignored.

Such a model of gold price determination is analogous to capital asset pricing models of the equity market. In such models, the valuation of equities is driven by changes in the risk-adjusted return to alternative portfolio assets such as deposits and bonds. No allowance is made for

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This model treats gold as a stateless currency. Its relative price is the result of changes in its risk adjusted return vs. the risk adjusted return of other assets. There are no flow supply or flow demand variables in this model. The rationale for such a model is that the stock of above ground gold is so large relative to flow variables like mine supply or official sales that they can be ignored.

increases in personal income and savings which increase the demand for equities or the net issue of new equities which increases the supply.

Our model is a commodity flow supply/flow demand model similar to the models that consulting firms use to make long run price projections for producers of commodities such as copper, pulp or oil. We employ such a model because we believe that, under current conditions, most of the above-ground stock of gold does not move. More than half of all gold is in jewelry form; for the most part, once purchased, it is kept forever.

Western investors have largely left the gold bullion market. There is investment demand for small bars and “investment” jewelry in the Far and Middle East. However, this investment demand is not influenced by dollar inflation or interest rates. In fact, it is not that sensitive to inflation or interest rates in the currencies of these Far and Middle East countries. These gold buyers appear to allocate a fairly fixed share of their budget to gold investment items, much as consumers allocate a fixed share to jewelry purchases. As a consequence, a flow supply/flow demand commodity type model captures investment demand in these Far and Middle East countries better than a portfolio balance model such as Sherman’s.

Let us explain the workings of our model in somewhat greater detail. The gold demand curve exhibits an elasticity that is less than unity but that is greater than most other commodities which tend to be quite price inelastic. The mine supply curve slopes gradually upward in its inframarginal portion; that is, mine supply is somewhat price elastic at very low gold prices. By contrast, the marginal portion of the mine supply schedule is almost vertical; under normal conditions mine supply is inelastic with respect to the gold price.

We will show in the next section that the income elasticity of gold demand exceeds unity. The gold demand curve shifts outward by an amount that exceeds growth in world income. New discoveries and technological change also cause the mine supply curve to shift outward, but at a lower rate than global income growth. As a consequence, to bring global gold supply and demand into balance, the relative price of gold tends to rise.

There are two other important flow supply variables: Scrap and official flows. Scrap is of lesser importance and it is complex. In a nutshell, over the long run it is a function of: Gold demand in the cur-

Our model is a commodity flow supply/flow demand model similar to the models that consulting firms use to make long run price projections for producers of commodities such as copper.

In such a model, we treat official flows as a purely exogenous variable. Increases in the supply of official gold shift the gold supply schedule outward. If we exclude trend shifts in global gold mine supply due to discoveries and technological change and trend shifts in global gold demand due to world income growth, given a .5 to 1.0 elasticity of gold demand, a 1% increase in gold supply stemming from an increase in official flows reduces the relative price of gold by 1% to 2%.

We believe that our commodity flow supply/flow demand model fits the facts and that portfolio balance models do not.

Dale Henderson of the U.S. Fed states that central banks could sell all their gold and the gold price would decline to \$309. Henderson must employ a variant of a portfolio balance model to conclude that so large an official sale would have so little impact on the gold price.

Clearly he is wrong. Total official flows were probably 1,600 tonnes in 1997, not 35,000 tonnes. Yet the gold price has fallen below \$300. When asked about this, Henderson has apparently taken refuge in rational expectations: The market expects the central banks to sell all their gold and it is pricing gold accordingly.

rent period, since some scrap comes from the recycling of jewelry; gold demand several decades prior, since it is this vintage of gold products which are passing out of economic use and entering the well of obsolescent scrap; and the price of gold relative to the costs of scrap recovery.

We treat official flows as a purely exogenous variable: The Belgian and Dutch central banks will sell 500 tonnes of gold in one year, whereas in the next year central banks overall may become net purchasers. Increases in the supply of official gold shift the gold supply schedule outward. If we exclude trend shifts in global gold supply due to discoveries and technological change and trend shifts in global gold demand due to world income growth, given a 0.5 to 1.0 elasticity of gold demand, a 1% increase in gold supply stemming from an increase in official flows reduces the relative price of gold by 1% to 2%. Conversely, a 1% reduction in such flows causes a 1% to 2% increase in the real gold price. Under “normal” conditions, shifts in the supply curve due to changes in official flows do not affect mine supply output since the demand curve still intersects the vertical portion of the mine supply schedule. However, under some conditions (currently below \$300 gold), a large outward shift in the supply curve due to an exogenous increase in official flows will cause the demand curve to intersect the flatter portion of the mine supply schedule and mine output will be significantly affected.

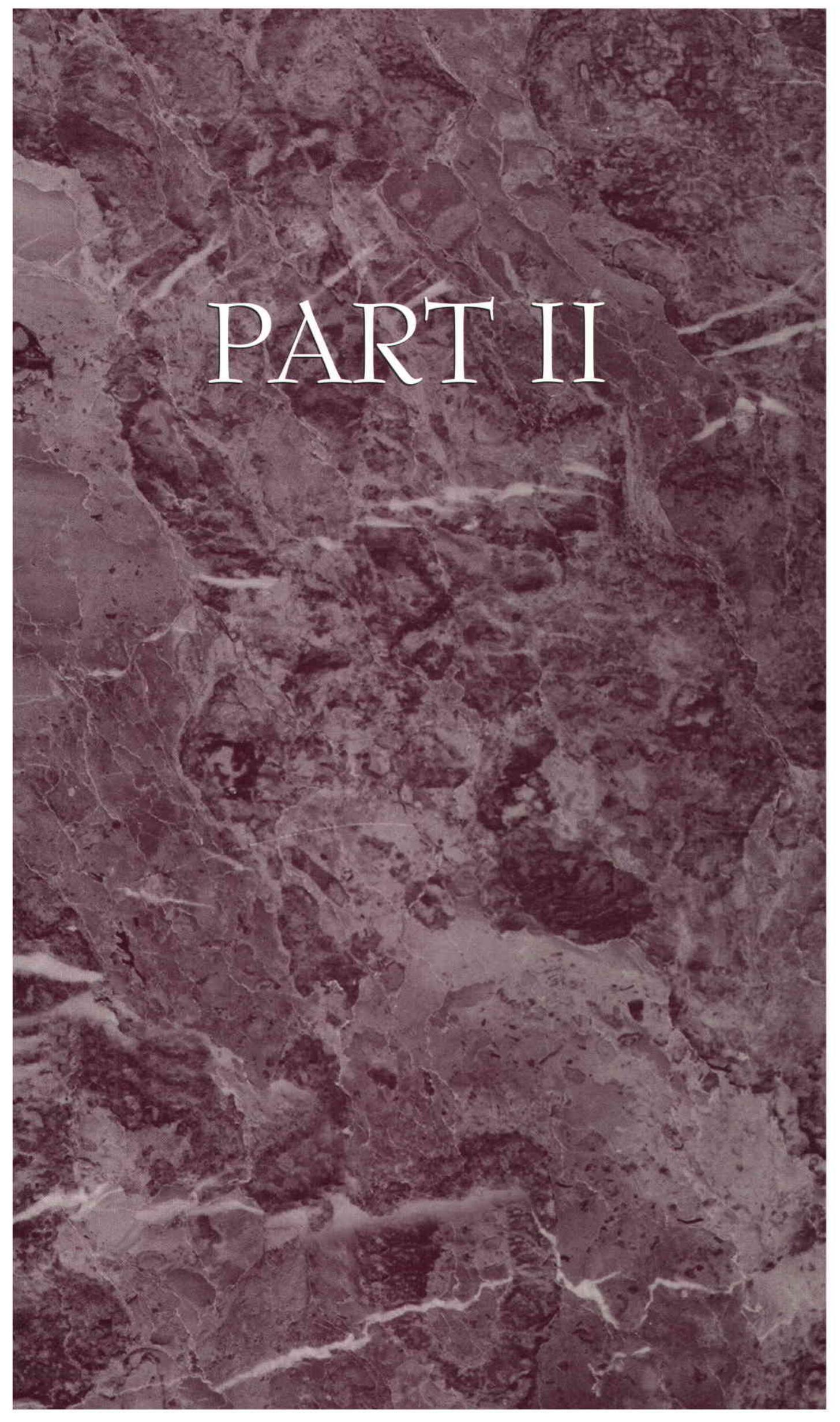
We believe that our commodity flow supply/flow demand model fits the facts and that portfolio balance models do not. In a recent paper by Dale Henderson³ of the U.S. Federal Reserve, Henderson states that the Fed could sell immediately all 8,100 tonnes of its gold and the gold price would decline to \$340. He goes further and states that all the central banks could sell all their gold and the gold price would decline to \$309.

Henderson must be employing some variant of a portfolio balance model to conclude that so large an official sale would have so little impact on the gold price. Clearly he is wrong. The official sector has probably sold more than 500 tonnes in 1997 and total official gold sales and gold loans combined were probably 1,600 tonnes in 1997, not 8,000 tonnes or 35,000 tonnes. Yet the gold price has fallen below \$300.

³ “A Note on Government Gold Policies,” Dale Henderson, Federal Reserve Board and Stephen Salant, University of Michigan, June 4, 1997.

When asked about this, Henderson has apparently taken refuge in rational expectations: The market expects the central banks to sell all their gold and it is pricing gold accordingly. This is surely not the case. Almost all global demand for gold today is comprised of jewelry purchases by households, mostly in the emerging world, who know nothing about present or future official sales. By contrast, our model explains the current decline in the gold price perfectly. An increase in official flows of more than 500 tonnes in 1997, plus an adverse shift in the demand curve in the second half of 1997 owing to the Asian currency crisis, generates the price path of gold that we have had in 1997. ♦

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The background of the entire page is a classic marbled paper pattern. It features a complex, organic design with swirling, vein-like patterns in various shades of brown, from light tan and beige to deep, dark chocolate and near-black tones. The overall effect is rich and textured, typical of traditional bookbinding aesthetics.

PART II

THE STRONG
SECULAR TREND
IN GOLD
CONSUMPTION

In the prior chapters, we concerned ourselves with the current state of the gold market, addressing the questions: What is the true level of global gold demand and the gold market deficit? What is the true volume of outstanding gold borrowings? Where would the gold price go if the flow of official gold stopped?

In the remaining chapters we will look forward, with the aim of forecasting future supply/demand balances and ultimately the future price of gold.

In this chapter we try to determine the long-term trend rate of growth of gold demand. We conclude that it is unusually high. It is quite a simple thesis. However, as it is not a consensus view, we are obliged to get involved in statistics once again. For the trusting reader, the italicized summary should suffice.

THE SECULAR GROWTH TREND IN GOLD CONSUMPTION IS THE HIGHEST OF ANY MAJOR COMMODITY

Western World fabrication almost doubled between 1971 and 1996, rising at a 2.4% per annum rate, despite a three-fold increase in the real gold price.

Western World fabrication demand (excluding official coins and scrap¹) almost doubled between 1971 and 1996, rising at a 2.4% per annum rate, despite a more than ten-fold increase in the nominal dollar gold price and an almost three-fold increase in the real gold price.

Compare this to copper, where Western World demand has also almost quite doubled, but where there was only a two-fold increase in the nominal copper price and a huge decline in the real price. Virtually no other major commodity, including oil, has exhibited such a positive real price trend over the last several decades.

Gold is a relatively price elastic commodity. What would have happened to gold demand had the real gold price not tripled during this 25-year period? It would have increased at a much higher rate.

Gold is a relatively price elastic commodity. We must ask ourselves, what would have happened to gold demand had the real gold price not tripled during this 25-year period? The answer is simple; it would have increased at a much higher rate.

To understand the extent of this price elasticity of gold demand with respect to the real price of gold, it is useful to conduct one of our thought experiments designed to illustrate the impact of gold's elasticity of demand with respect to price. The principal end use of gold is jewelry. We pose the question, what would happen to the demand for jewelry and the gold it contains if the gold price were to fall in real terms by two-thirds, bringing it to the level that prevailed in 1971?

All the other components of the cost of jewelry manufacturing would remain the same, but the cost of the gold would fall by two-thirds. For every \$1 of jewelry manufacturing costs, the \$0.33 stemming from labor, amortization of machinery, and the like would remain the same, while the \$0.67 stemming from gold would fall to \$0.22. Therefore, the cost of gold jewelry would fall almost in half (from \$1.00 to \$0.55).

We will make a further assumption – that households spend a fixed share of their budget on jewelry. If jewelry costs less, they do not

1 Gold Fields Mineral Services, Ltd. (GFMS) only began to estimate gold scrap supply in 1980. All fabrication demand estimates were net of scrap prior to 1980. To generate a consistent series over 25 years we have been forced to net scrap from the GFMS demand data statistics since 1980. Over this 25-year period the real gold price rose almost three-fold. This should have caused scrap supply to increase relative to fabrication demand. Therefore, our 25-year series on fabrication demand net of scrap should show less demand growth than in fact occurred for fabrication demand including scrap. The very high trend rate of demand growth under conditions of a constant gold price that we calculate in this chapter probably understates the true underlying trend during this period. Also, GFMS includes official coin demand in fabrication demand. In our opinion, official coin demand is largely a component of Western investment demand. Since we are interested in the trend in physical demands which are a stable function of global income and the real gold price, we have also excluded official coins from our measure of fabrication demand.

spend less on jewelry; they simply buy better items containing more gold. On this assumption, if the gold price were to fall by two-thirds, households would spend the same number of dollars (or yen, or marks, etc.) on gold jewelry and, in doing so, they would purchase almost twice as many ounces of gold.

Though this may not exactly capture the price elasticity of gold demand, it is a good approximation.² What it tells us is that, had the gold price remained at its 1971 level in real terms, Western World gold consumption excluding official coin and scrap would have risen to more than 4,200 tonnes by 1996 – more than 80% greater than the actual offtake of 2,336 tonnes. This would represent a more than three-fold increase from 1971's 1,325 tonnes, resulting in an annual 4.8%-rate of growth of fabrication demand. Such a high rate of growth – almost 40% more than the annual global rate of Gross Domestic Product (GDP) growth of 3.5%-plus – seems hardly credible.

AN ALTERNATIVE CALCULATION... THAT CONFIRMS A STRONG SECULAR DEMAND TREND

Looking at Western World gold demand from several other perspectives confirms such a strong secular trend in demand.

For example, we took several time periods in which the real price of gold rose and then fell back to its original level and calculated the compound rate of increase in fabrication demand (excluding official coins and scrap) over these intervals. As we explained in Chapter Four, inventory fluctuations create large short-term deviations in fabrication demand from equilibrium. Also, because the short run elasticity of gold demand far exceeds its long run elasticity, the demand in any one calendar year after a large move in the gold price is likely to be somewhat removed from its longer run equilibrium level. This is also true for scrap supply, which data constraints are forcing us to net out of gross fabrication demand. To deal with this short run “noise” in the data, we have taken many time periods over which the real gold price rose and then returned to its prior level and averaged the compound rates of increase in demand over these intervals.

Despite the extreme short run fluctuations in demand, these growth rates of demand for these six intervals fell within a reasonably narrow

Had the gold price remained at its 1971 level in real terms, gold consumption would have risen to more than 4,200 tonnes by 1996 – more than 80% greater than the actual offtake of 2,336 tonnes. This would represent an annual 4.8% rate of growth of fabrication demand, almost 40% more than the annual global rate of GDP growth of 3.5% plus.

² In the above thought experiment, we focused only on jewelry demand. Overall physical demand encompasses other fabrication uses like electronics as well as bar hoarding outside Europe and North America. The former is less price elastic than jewelry while the latter is more price elastic. These two other sources of physical demand are roughly equal in annual volumes. Therefore, the price elasticity of overall physical demand is similar to that of the dominant jewelry component. If we exclude bar hoarding, fabrication demand net of official coins and scrap is probably a little less price elastic than jewelry demand alone.

We have taken many time periods over which the real gold price rose and then returned to its prior level and averaged the compound rates of increase in demand over these intervals. They averaged 5.9%, which is fairly close to the 4.8% trend real rate of demand growth we calculated above for the entire 1971-1996 period.

range of 2.8% to 10.5%. They averaged 5.9%, which is fairly close to the implied 4.8% trend rate of demand growth relative to a constant real gold price that we calculated above for the entire 1971-1996 period.

Western World Fabrication Demand <i>(Excluding Official Coins and Scrap)</i> <i>Rates of Change in Demand Over Periods with a Constant Real Gold Price</i>		
Period	Growth Rate	Real Gold Price
1974-1986	6.6%	\$131-136
1975-1990	6.3%	\$121-120
1978-1990	2.8%	\$120-120
1979-1983	6.5%	\$170-172
1982-1987	2.8%	\$157-159
1985-1990	10.5%	\$119-120

THE GOLD DEMAND TREND: A SHARP BREAK AFTER 1990?

From 1971 through 1996, the trend rate of growth of global gold fabrication demand net of official coin and scrap relative to a constant real gold price was 4.8%. Over six constant real gold price intervals from 1971 through 1990, the average rate of growth of such demands was 5.9%.

Why the difference? We have disaggregated the 1971 to 1996 period into two intervals – 1971 through 1990 and 1991 through 1996. We then asked the question, if we employ our estimate of gold’s long run price elasticity of demand, what was the trend rate of growth of gold demand net of coin and scrap relative to a constant real gold price over these two intervals?

The results were striking. In the period, 1971 to 1990, the implied trend rate of growth of Western World gold demand was 5.2%; this was closer to the 5.9% rate of growth we calculated from our six constant real gold price intervals. In the subsequent five-year period, 1991-1996, the implied trend rate of growth of global gold demand fell to below 2%.³ It appears that, in the GFMS data series, there is a very dramatic change in the trend rate of growth of gold demand net of coin and scrap between the 1970s and 1980s, on the one hand, and the 1990s on the other.

Viewed in the context of global economic growth at the time this seems very anomalous. The economies of emerging Asia, with their high gold “intensity of use,” had grown so rapidly since the mid to late

In the GFMS data series, there is a very dramatic fall in the trend rate of growth of gold demand net of coin and scrap between the 1970s and 1980s, on the one hand, and the 1990s on the other.

³ We have data on gold demand for China, Russia and the other East Bloc economies since 1990. Since China has become an important source of gold demand, we have employed global gold demand data for the 1990s.

Emerging Asia's Share in Aggregate Global GDP (1996*)	
Four Asian Tigers (Korea, Hong Kong, Taiwan, Singapore)	3.4
China and India	15.2
Other Asia	7.3
TOTAL	25.9

*Source: IMF

1980s that their share of global income rose to close to one-quarter of global GDP in the 1991-1996 period.

The growth rate of these economies was close to 7% per annum during this five-year period. By contrast, there was much slower growth in the advanced industrial economies (the four Asian Tigers). Consequently, their share of global GDP fell to only 53.2% by 1996. Because of stagnation in Europe and Japan, economic growth in these advanced countries fell to an average rate of 2.1% in this five-year period vs. a 2.9% average from 1979 to 1988.

Emerging Asia's growth rate picked up in the 1990s vs. prior decades, primarily because of improved performance in China and India. More importantly, emerging Asia's share of global GDP was far higher than in prior decades. By the 1991-1996 period, emerging Asia's economic growth was contributing more than one and one-half percentage points to overall global GDP growth. A decade or two earlier this contribution was closer to one-half percent.⁴ Overall then, emerging Asia's larger share of the world economy and its very high growth rate lifted global GDP growth to prior decade levels, despite slower growth in the G-10 economies.

The economies of emerging Asia have an unusually high intensity of gold use. As the table on the next page illustrates, in all of these economies, except China, the ratio of reported gold consumption to GDP is many times higher than it is in the Western industrialized countries. [As we discussed in Chapter One and its appendices, recorded gold jewelry consumption in China is anomalously low for an emerging Asian economy, in part because it is underestimated by World Gold Council (WGC).]

The economies of emerging Asia have an unusually high intensity of gold use.

Global GDP growth overall was as rapid in the 1990s as it was in the prior two decades owing to emerging Asia's contribution. Since

⁴ David Hale of Zurich Kemper has done a similar calculation and has concluded that emerging Asia contributed more than half of global GDP growth in the 1990s. David Hale, Zurich Kemper, Global Economic Observer, December 1997.

Intensity of Gold Use
Emerging Asian Economies vs. Advanced Western Economies
(Employing PPP-based estimates of GNP)

	Gold Jewelry & Bar ¹ Consumption (tonnes)		GNP in billions \$		Value of Gold Consumption/GNP	
	'94	'95	'94	'95	'94	'95
Emerging Economies						
China	224.3	223.9	2,989.1	3,504.6	.092	.079
Hong Kong	47.5	43.2	132.1	142.5	.442	.371
India	415.0	477.2	1,169.4	1,301.2	.436	.45
Indonesia	97.0	119.0	685.0	734.5	.174	.199
Malaysia	248.0	29.6	166.3	181.3	.183	.200
South Korea	106.0	121.0	459.7	504.1	.284	.289
Taiwan	162.0	160.2	352.0	381.8	.565	.515
Thailand	124.0	116.0	404.3	438.8	.377	.325
Turkey	80.8	139.4	286.4	340.9	.347	.504
Advanced Economies						
Germany	80.8	96.3	1,587.6	1,643.7	.063	.072
U.S.	300.6	314.9	6,744.3	7,152.4	.055	.054

1) Source: World Gold Council

2) Source: World Development Report 1996, Taiwan Council for Economic Planning & Development Data Book, 1996

Since emerging Asia accounted for almost half of all global income growth in the 1990s vs. only a small share in the 1970s and 1980s, global gold demand growth in the 1990s should have exceeded the rates of the prior decades. Yet the GFMS data says that the growth rate of global gold demand fell sharply. It is for this reason that we consider the 1991-1996 GFMS data on global gold demand as highly questionable.

emerging Asia, with its exceedingly high “intensity of gold use,” accounted for almost half of all global income growth in this period vs. only a small share in the 1970s and 1980s, global gold demand growth in the 1990s should have exceeded the rates of the prior decades. Yet, the GFMS data says that the growth rate of global gold demand fell sharply. It is for this reason that we consider the 1991-1996 GFMS data on global gold demand as highly questionable.

In this chapter, we will try to determine the trend rate of growth of gold demand going forward. This sharp break in the GFMS data trend poses an all-important question: When the real price of gold is constant, will gold demand grow well in excess of global GDP in coming years, as it had in the 1970s and 1980s? Or will it grow far less rapidly than global GDP, as the GFMS data says it has in the 1990s?

We will approach this issue in two ways. First, we have been dealing with growth in demand for gold net of coin and scrap; we will disaggregate the GFMS data to understand the role of scrap in this apparent slowdown in demand. Second, we will compare the GFMS data for this period to comparable demand data from the World Gold Council. In both cases, we will encounter evidence that the GFMS gold demand data for the 1990s appears to understate global gold demand and to an increasing degree. This confirms the analysis of gold demand in Chapter One. This evidence also suggests that the

strong global gold demand trend of prior decades did in fact persist throughout the 1990s.

**A STRONGLY POSITIVE TREND IN SCRAP SUPPLY
IN THE 1990S SUGGESTS RAPID DEMAND GROWTH**

The lack of a separate series on gold scrap from 1971 to 1980 has forced us to work with a series on fabrication demand net of scrap.⁵ Netting scrap from this global demand series is not ideal.

As explained in Chapter Five, scrap supply is positively correlated with gold consumption and inversely correlated with the real price of gold. Though the long run price elasticity of gold scrap is much less than its short run elasticity, a higher real gold price should raise gold scrap supply to some degree.

Between 1971 and 1990, the real dollar gold price rose by more than three-fold. Scrap supply should have grown somewhat more rapidly than final fabrication demand. If so, the data series on fabrication demand net of scrap that we have been working with should understate the true growth rate of final gold demand. If anything, the implied rate of growth of gold demand including scrap relative to a constant real gold price probably exceeded 5.2% over this period. Adjusting for growth in scrap supply would nudge our implied rate of growth of gold demand closer to the 5.9% rate we calculated for six constant real gold price intervals during the 19 years from 1971 to 1990.

Below we set out the growth rates of fabricated demand net of official coin and scrap on a disaggregated basis for the years 1991 to 1996.

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Growth in Global Gold Demand, 1991-1996, GFMS (tonnes)								
	1991	1992	1993	1994	1995	1996	5-Year % Rate of Change	
	1991	1992	1993	1994	1995	1996	91-96	Annual
Fabrication Demand	2,866	3,205	3,034	3,074	3,266	3,290	14.8	2.8
Official Coin	143	93	117	-80	84	63	-55.9	-15.2
Fabrication Ex-Coin	2,723	3,192	2,917	2,954	3,182	3,227	18.5	3.5
Scrap	480	487	574	615	625	644	34.2	6.1
Fabrication Ex-Coin & Scrap	2,243	2,705	2,343	2,339	2,557	2,583	15.2	2.9
Real \$ Gold Price	108	100	101	105	103	100		

⁵ To focus on fabrication demand rather than investment demand, we also netted official coin demands as well as scrap from the data series.

During this five-year period from 1991 to 1996, the nominal dollar price of gold rose from \$362 to \$388, or 7.2%. However, because of 3% per annum U.S. inflation, the real price of gold in 1971 dollars fell from \$108 to \$100, or 7.4%. A large contributor to the slowdown in the growth rate of fabrication demand net of coin and scrap was a high growth rate in scrap supply. Before netting out scrap supply, fabrication demand (ex-official coin) grew 18.5% overall and 3.5% annually. Meanwhile, scrap supply rose a very large 34.2% overall and at a 6.1% annual rate. This large rise in scrap supply reduced the annual average rate of growth in fabrication demand net of scrap and coin over the 1991-1996 period by six-tenths of a percent to 2.9%.

From 1991 to 1996 fabrication demand including scrap but net of official coin demand grew 3.5%. Scrap supply rose a very large 34.2% overall and at a 6.1% annual rate.

A 6% rate of growth in scrap supply amidst a declining real gold price would suggest that fabrication demand was growing during the period at more than 6%, not at the slower 3.5% rate estimated by GFMS.

Such rapid growth in scrap supply between 1991 and 1996 appears anomalous. Scrap supply grew far in excess of GFMS estimates of final fabrication demand in this period. Yet the 7% fall in the real gold price during this period should have caused scrap supply to grow more slowly than final fabrication demand. GFMS estimated rate of growth in scrap supply amidst a declining real gold price would suggest that fabrication demand was growing during this period at more than 6%.

We are forced to conclude one of two things: Either GFMS estimates of scrap supply are too high or their estimates of fabrication demand growth are too low. To resolve this dilemma, we will compare the trend in global demand growth in the GFMS data series to our alternate data series on gold demand provided by the WGC. Judging from the WGC data, it appears that GFMS both understates fabrication demand growth and overstates scrap supply growth in this five-year period. Overall, their underestimation of fabrication demand is probably significantly greater than their overstatement of scrap supply.

GFMS AND WGC DEMAND DATA: 1991-1996

The WGC data on global gold demand exhibits a much more rapid trend rate of growth in gold demand in the 1990s than does the GFMS data. Below we compare the GFMS and WGC gold demand series for this period. These demand series do not net out scrap. Both data series encompass only the jewelry, coin, dental and bar hoarding items surveyed by WGC.

**Gold Fields Mineral Services
Gold Demand 1991-1996 (tonnes)**

	1991	1992	1993	1994	1995	1996	5-Year Rate of Gain	
							Overall	Per Annum
Jewelry	2,356	2,758	2,551	2,610	2,767	2,807	19.1	3.6
Official Coin	143	93	117	801	84	63	-55.9	-15.1
Dental	56	60	59	60	64	65	16.1	3.0
Bar Hoarding	252	282	162	231	306	182	-27.8	-6.3
Total	2,807	3,193	2,889	2,981	3,221	3,117	11.0	2.1

**World Gold Council
Gold Demand 1991-1996 (tonnes)**

	1991	1992	1993	1994	1995	1996	5-Year Rate of Gain	
							Overall	Per Annum
Developing Markets	1,300.4	1,722.2	1,652.8	1,644.5	1,806.9	1,824.8	40.3	7.0
Developed Markets	805.4	796.9	822.9	815.6	919.0	799.2	-8	-2
Total	2,105.8	2,519.1	2,475.7	2,460.1	2,725.9	2,624.0	24.6	4.5

First, let us compare the WGC and GFMS data encompassing all gold demand including bar hoarding. The WGC data series for 1991-1996 show a much stronger trend in demand than the GFMS data series. This extends to all demand categories.

Over a five-year period, the GFMS demand series show an 11% overall rise, yielding a 2.1% compound rate. The comparable WGC data series show a 24.6% overall rise, yielding a 4.5% compound annual rate.⁶

Let us now disaggregate this data by type of demand. First, let us look at jewelry demand alone.

We see that, according to WGC, in the 1990s jewelry demand grew at a 5.7% rate. That was close to the average rate of fabrication demand net of coin and scrap over the prior two decades. For GFMS, by contrast, jewelry demand grew at a two percentage point lower rate.

For all gold demand including bar hoarding, the WGC data series for 1991-1996 show a much stronger trend in demand than the GFMS data series.

The GFMS demand series show an 11% overall rise, yielding a 2.1% compound rate. The comparable WGC data series show a 24.6% overall rise, yielding a 4.5% compound annual rate.

Global Jewelry Demand, WGC vs. GFMS*

	1991	1992	1993	1994	1995	1996	5-year Rate of Gain Per Annum	
							Overall	Per Annum
WGC	1,763.2	2,179.3	2,121.4	2,132.1	2,283.0	2,296.7	30.3	5.7
GFMS	23,560.0	2,758.0	255.0	2,610.0	2,767.0	2,807.0	19.01	3.8

* For WGC, data encompasses only 80% of the global market.

⁶ This very large discrepancy cannot be explained away by changes in inventory demands. Just in time inventory trends may have reduced fabrication demand growth relative to final demand growth to some extent in this period. And inventory demands (which are never fully reflected in the GFMS series) may have been somewhat disparate at the beginning and end of this six-year period. But these factors are not likely to explain most of this discrepancy in the estimates of demand growth, if, in fact, they explain any of it at all.

For WGC, bar hoarding in the developing world rises significantly over this five-year period. For GFMS, this same item falls precipitously.

Global Bar Hoarding WGC* vs. GFMS (tonnes)								
	1991	1992	1993	1994	1995	1996	5-year % Rate of Gain Per Annum	
							Overall	Per Annum
WGC	202.5	229.8	201.3	200.9	246.6	245.8	21.4	3.95
GFMS	252.0	282.0	162.0	231.0	306.0	182.0	-27.8	-6.3

*WGC data also includes official coin demand in the developing world. It includes less than 100% of the market.

The dental market is a very small market; in absolute terms it is not very significant. What is significant, however, is that once again the WGC data shows a higher growth rate in demand for this market sector over this time period.

Global Dental Demand, WGC vs. GFMS *								
	1991	1992	1993	1994	1995	1996	5-year % Rate of Gain Per Annum	
							Overall	Per Annum
WGC	50.8	54.1	53.5	55.7	59.5	62.1	22.2	4.1
GFMS	56.0	60.0	59.0	60.0	64.0	65.0	16.1	3.0

What should we conclude? In Chapter One we showed that the WGC global gold demand survey implies much higher levels of global gold demand than the GFMS survey. We argued that the WGC data looked qualitatively superior to the GFMS data. In Chapter Two we uncovered vast flows of borrowed gold that are not reflected in the GFMS balances. Unrecorded supplies imply unrecorded demands. The WGC demand data is consistent with such large unrecorded flows of borrowed gold. The GFMS demand data is not.

This greatly reinforced our view that the WGC demand survey is more accurate. Now we see that this discrepancy between these two demand series has emerged progressively throughout the 1990s.

The 13.6 percentage point difference in these two estimates of growth in global gold demand between 1991 and 1996 results in a cumulative divergence in their corresponding estimates of the level of global gold demand of roughly 400 tonnes. It appears that most of the “implied” difference between the GFMS and WGC 1995-1996 estimates of global gold demand (discussed in Chapter One) emerged in the period from 1991 to 1995.

For making forward projections, we will work with the trends embodied in the WGC demand survey rather than in the GFMS data for two

reasons. First, as we explained in prior chapters, we have much more confidence in the WGC demand data. Second, as we discussed earlier in this chapter, the changing composition of global GDP growth and the large share of the annual increase in global GDP attributable to Asia in the 1990s suggest that growth in global gold demand should have remained very strong. It certainly should not have fallen sharply as the GFMS data series suggests. The WGC demand data shows a trend rate of growth of jewelry demand of 5.7% from 1991 to 1996. Had the real price of gold not fallen slightly during this period, such jewelry demands might have risen less rapidly, perhaps at closer to a 5% per annum rate. We would expect industrial uses for gold to grow somewhat more slowly.

Overall, the WGC demand survey shows a trend rate of growth of demand relative to a constant real gold price of somewhat less than 5%. This trend was a little more than 5% in the 1970s and 1980s.

During this period, 1991-1996, there was unequivocally a steep decline in official coin sales. Bar hoarding outside Europe and North America showed little growth. These two components of global gold demand are now at fairly low levels. The odds are as great that they will rebound significantly, as they periodically do, as that they will not. Overall, we would expect the growth rate of overall global gold demands to be slightly lower than the growth rate of fabricated demand.

Assessing this global gold demand data, we are inclined to weigh most heavily the most recent period of the 1990s. However, we do believe we should give some weight to the higher implied trend rate of growth of gold demand during the prior two decades. The growth rate of fabricated gold demand exceeded 10% in the constant price interval 1985-1990. This looks anomalously high. It is possible that gold demand surged on the price decline from 1987 to 1990 and robbed some demand growth from the subsequent years of the early 1990s.

One other consideration leads us to believe that the growth rate in global demand for gold may have been somewhat higher in the 1990s than suggested by the WGC data.

As we explained in Chapter One, the WGC data series surely understates Chinese gold demand, and it probably understates Chinese demand growth as well. Chinese real personal disposable income

According to WGC, in the 1990s jewelry demand grew at a 5.7% rate. That rate is close to the average rate of fabrication demand net of coin and scrap over the prior two decades. For GFMS, jewelry demand grew at a two percentage point lower rate.

In Chapter One, we showed that the WGC global gold demand survey implies much higher rates of global gold demand than the GFMS survey.

The 13.6 percentage point difference in these two estimates of growth in global gold demand from 1991-1996 results in a cumulative divergence in their corresponding estimates of the level of demand of roughly 400 tonnes. Most of the "implied" difference between the GFMS and WGC estimates of global gold demand emerged in the period from 1991 to 1995.

For making forward projections, we will work with the embodied trends in the WGC demand survey rather than in the GFMS data.

On balance, the longer term historical record, as well as two special considerations, suggest to us that the prevailing trend in overall gold demand relative to a constant real gold price and trend global income growth is on the order of 5% per annum.

What if the real size of the emerging economies of Asia lies somewhere between the PPP and exchange rate based GDP data? Then the growing share of Asian income in total global income would result in a more rapid trend rate of growth of gold demand than this chapter has estimated.

growth almost doubled between 1991 and 1996, yet WGC estimates that Chinese gold demand rose by only 24% during this period. It is possible that the WGC has underestimated the five-year increment to Chinese gold demand by 100 tonnes. This would depress annual growth in global gold demand in the period by roughly three-quarters of a percentage point.

In other words, if Chinese demand for gold has in fact grown in line with Chinese real income, WGC's global demand survey would point to a trend rate of growth of gold demand for the period 1990-1996 well in excess of 5% per annum – not slightly below 5% per annum.

On balance, the longer term historical record, as well as these two special considerations, suggest to us that the prevailing trend in overall gold demand relative to a constant real gold price and trend global income growth is on the order of 5% per annum.

A BRIEF POSTSCRIPT ON ASIA'S SHARE OF GLOBAL GDP

In this book, we always use GDP and GNP estimates based on purchasing power parity (PPP) rather than exchange rate based GDP and GNP estimates. This is very important, since, for the largest Asian countries like China and India, estimates of GDP based on PPP exceed estimates of GDP based on exchange rates by several-fold. For example, using the former estimates, the GDP of China is almost half that of the U.S., whereas using the latter it is 10% of that of the U.S.

For many reasons, we are confident that only PPP-based estimates of GDP make any sense when one considers commodity demands in emerging economies. Below, we present a comparison of intensities of use of gold among countries employing exchange rate based rather than PPP-based estimates of country GDPs. The results are striking: The intensity of use of gold in emerging Asia is several times higher if one uses exchange rate rather than PPP-based GDP data. The resulting intensity of gold use in Asia is so much higher than it is in the industrialized West that these estimates do not seem plausible.

What if the real size of the emerging economies of Asia is less than PPP-based GDP data suggests? What if the real size of these economies lies somewhere between the PPP and exchange rate based data? It would follow that the intensity of use of gold in these emerging countries is even higher relative to the advanced industrialized countries than this chapter has assumed.

**Intensity of Gold Use (Employing Exchange Rate Based Estimates of GNP)
Emerging Asian Economies vs. Advanced Western Economies**

	Gold Jewelry, Bar & Coin Consumption		GNP		Value of Gold Consumption/GNP	
	'94	'95	'94	'95	'94	'95
Emerging Asian Economies:						
China	224.3	223.9	1,190.9	1,200.2	.436	.370
Hong Kong	47.5	43.2	132.1	142.5	.442	.371
India	415.0	477.2	292.4	316.0	1.746	1.855
Indonesia	97.0	119.0	167.6	189.4	.713	.774
Malaysia	248.0	29.6	68.6	78.2	.443	.465
South Korea	106.0	121.0	367.6	435.5	.355	.341
Taiwan	162.0	160.2	264.3		.451	NA
Thailand	124.0	116.0	139.8	159.5	1.01	.896
Turkey	80.8	139.4	152.0	181.0	.653	.946
Advanced Economies:						
Germany	80.8	96.3	2,084.8	2,253.1	.047	.052
U.S.	300.6	314.9	6,744.3	7,152.4	.055	.054

Intensity of Gold Use – 1994		
Emerging Asian Economies:	Gold Demand GNP (ERB*)	Gold Demand GNP (PPP)
China	.436	.092
Hong Kong	.442	.442
India	1.746	.436
Indonesia	.713	.174
Malaysia	.443	.183
South Korea	.355	.284
Taiwan	.451	.565
Thailand	1.01	.377
Turkey	.653	.347
Advanced Economies:		
Germany	.047	.063
U.S.	.055	.055

* ERB refers to Exchange Rate Based

If this is the case, as the emerging Asian economies grow more rapidly than the West, the growing share of Asian income in total global income would result in a more rapid trend rate of growth of gold demand than this chapter has estimated. ♦



CHAPTER 7

DEALING WITH THE DISEQUILIBRIA OF 1997

In the prior chapter, we estimated that the trend rate of growth of gold demand has been very high at roughly a 5% annual rate. We must now consider long run projections of gold supply and demand and their implications for the future “equilibrium” gold price. This past year – 1997 – was one of great convulsions in the gold market. This chapter seeks to establish a stable platform for making long run projections amid the current prevailing chaos.

Compared to the earlier chapters of this book, this chapter is not a difficult read. Its final section focuses on the outlook for economic growth and gold demand in Asia. Our outlook is very positive. At the current juncture this is a controversial position, to say the least. For this reason, we are supporting our position with a lengthy essay entitled “A Long Run Perspective on Asia,” which is included in this book as an appendix to this chapter.

This analysis is based on two-and-a-half decades of advisory work to emerging world governments under similar crisis conditions. It is deeply indebted to a decade of collaboration with Professor Robert Wade of Brown University, a renowned expert on Asian finance and economic development. It is far more readable and of greater interest than the other more technical appendices of this book. Readers interested in the Asian crisis should at least scan the italicized liner notes of this appendix.

INTRODUCTION

Before we move forward to making long run projections for the gold market, we must deal with the great gold bear market of 1997. The years 1994-1996 were years of stability in the gold market as well as its economic context. Global Gross Domestic Product (GDP) growth was stable at roughly its trend rate. There was a sharp decline in the dollar against the yen in 1995, but, on balance, the dollar was near its average range of the 1990s and most other exchange rates were fairly stable. The gold market was in a short-run equilibrium of sorts with jewelry and other fabrication demands, on the one hand, offsetting mine and scrap supply and roughly a 1,000 tonne flow of official gold sales and loans, on the other.

In 1997 we have seen three destabilizing events. First, the pace of official flows, both sales and loans, has increased. Second, the dollar has soared to the high end of its 1990s range against the major developed country currencies. Lastly, an extremely severe currency, financial, and economic crisis broke out in the second half of the year in the bastion of private gold demand – Far East Asia.

We have discussed to some degree the step up in the pace of official flows in Chapter Three. We will return to this issue in coming chapters. In this chapter we focus on the impact of the strength in the dollar and the Asian crisis on the gold market. Our objective is to see through shorter run shocks and disequilibria to ascertain a sound basis for making long run projections.

GOLD DEMAND AND THE SOARING DOLLAR: THE INDUSTRIALIZED COUNTRIES

In this book, we make the case that global private demands for gold are a fairly stable function of global real income and the real price of gold. Of course, what matters is not the real price of gold in dollars but rather the real price of gold for economic agents in all the countries where gold is consumed. Therefore, gold demand is negatively correlated with the dollar exchange rate. When foreign currencies depreciate against the dollar, the real price of gold in their currencies rises relative to the dollar price of gold. This in turn curbs price elastic demands for gold in these foreign economies.

The appropriate dollar exchange rate is not one that is linked to the United States' principal G-7 partners; rather, it is an exchange rate against a basket of currencies weighted according to global gold

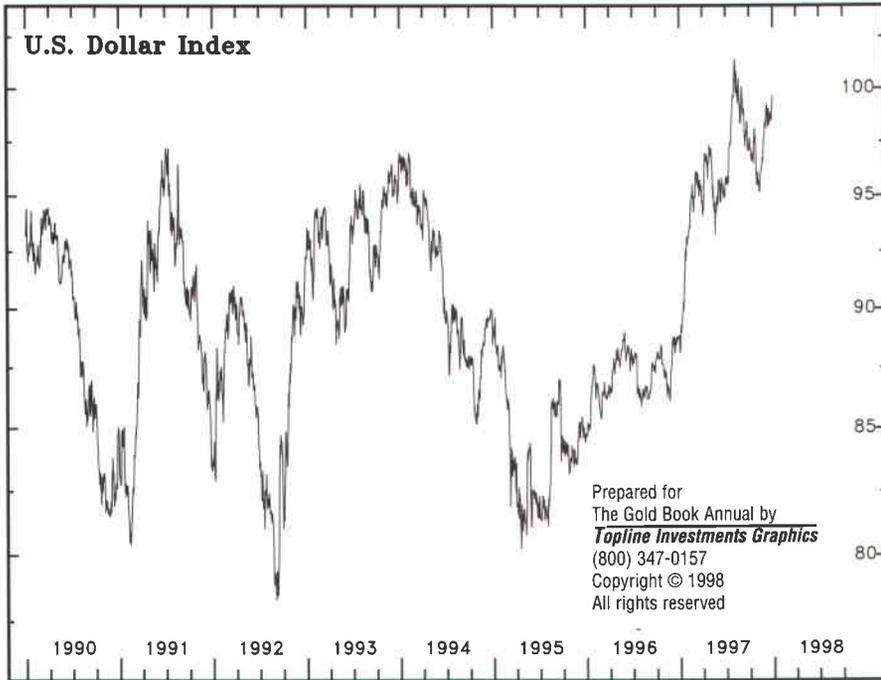
In this chapter, we focus on the impact of the dollar strength and the Asian crisis on the gold market.

Gold demand is negatively correlated with the dollar. The appropriate dollar exchange rate is linked to a basket of currencies weighted according to global gold demand, since it is this exchange rate that captures the effect of rising gold prices that result from dollar appreciation on global gold demand.

demand, since it is this exchange rate that captures the effect of rising gold prices that result from dollar appreciation on global gold demand.

Let us first consider the impact of the dollar exchange rate on gold demand in the developed countries. The U.S. dollar has been rising from a deep trough since mid-1995. In 1996 the average U.S. dollar exchange rate against the major industrialized countries had risen 6%-7% to close to its prior 10-year average.

In 1996, the average U.S. dollar exchange rate against the major industrialized countries had risen only 6%-7% to close to its prior 10-year average.



**Gold Demand in Europe, Japan and the U.S.
1995-1996 (tonnes)**

	Second Half '95	Second Half '96	% Change
U.S.	188.1	195.4	3.9%
Europe	177.1	165.5	-6.5%
Japan	121.2	72.3	-40.3%

The rise in the U.S. dollar amidst a stable U.S. dollar gold price caused the real price of gold to rise in the major industrialized countries outside the U.S. The expected changes in gold demand in these industrialized countries more or less occurred. Gold demand rose in the U.S. against a backdrop of a stable gold price and rising real income. In Europe, it was down against almost stagnant incomes and a moderately rising gold price. In Japan it fell sharply as a deep depreciation of the yen sent the real yen price of gold soaring. In all these cases, changes in inventory demands create some discrepancy between the actual change in gold demands relative to what one

The expected changes in gold demand in these industrialized countries more or less occurred.

might expect on the basis of income and price variables alone. In the case of Japan a special factor – a run on the Japanese banks – elevated demands in late 1995 and exaggerated the 1996 decline.

One might regard 1996 as a year in which the dollar exchange rate was close to a long run equilibrium, as it was close to its average level of the decade of the 1990s. From a short run perspective this might seem to be the case, but from a long run perspective it is doubtful.

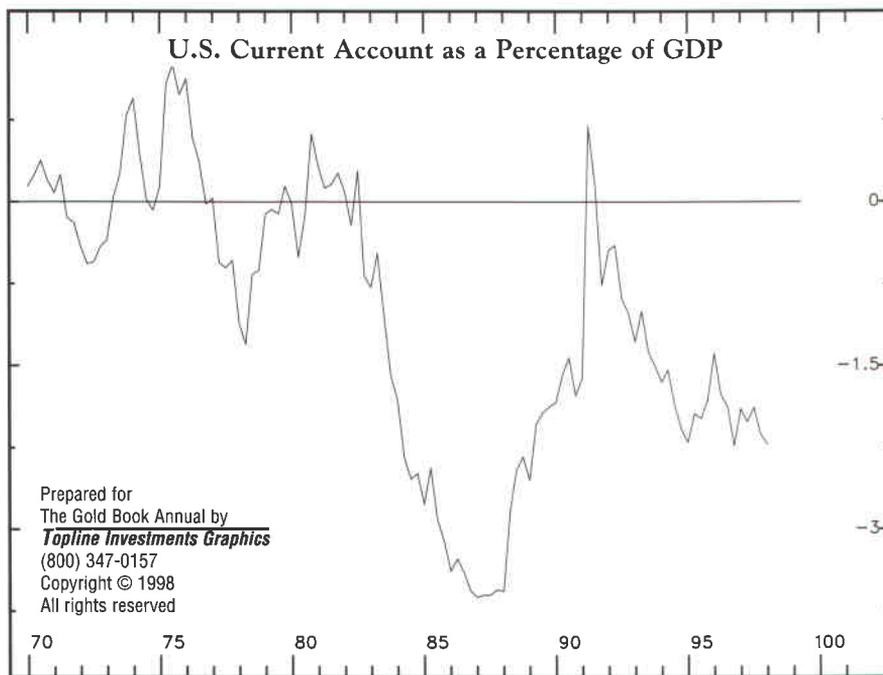
In 1996, the U.S. current account deficit, at almost 2% of GDP, was too large to be sustained.

In 1996, the U.S. current account deficit, at almost 2% of GDP, was simply too large to be sustained. Only a decade earlier, three years of a current account deficit of 3.0% of GDP from 1985 to 1987 created something of a trade and current account crisis and a severe dollar bear market. In the 1970s, there were two major bear markets in the dollar amidst U.S. balance of payments deterioration, even though the current account was healthier then than it was in late 1996.

There has been a long run secular tendency for the dollar to decline. This trend is rooted in profound economic fundamentals. The U.S. economy is the most advanced economy in the world. Other countries that are less advanced have a potential to catch up with the U.S. and in fact they tend to do so. (See the appendix to this chapter, “A Long Run Perspective on Asia.”) These countries exhibit higher productivity growth on trend than the U.S. Such productivity gains make them more competitive than the U.S. over time. These gains in competitiveness must be offset by an appreciation of the “real” exchange rates of these countries vis-à-vis the dollar. If the real dollar exchange rate did not devalue, the U.S. would experience an untenable rise in its current account deficit and eventually in its external debt.

This process is the inevitable tide of decades of history. This tide began to run with the unseating of the dollar in the early 1970s. So far in the postwar period, the other countries of the industrialized world have gone far toward catching up with the advanced state of economic development in the U.S. However, they have not quite reached it; there is some more relative progress to be made. This is reflected in the higher recorded productivity gains that have persisted in these countries in the 1990s relative to the U.S.

Therefore, U.S. competitiveness will erode somewhat further and the real dollar exchange rate against the other G-10 countries will tend to erode a bit further. From a long run point of view the U.S. dollar, with



its prevailing large current account deficit of 2% of GDP which will tend to widen on trend, was probably above a long run sustainable equilibrium in 1996.

We understand that many disagree with this position that the dollar was overvalued in 1996. But, in any case, a 2% of GDP current account deficit should carry enough weight to make it unlikely that the 1996 dollar exchange rate was not seriously undervalued from a long run perspective. Let us compromise and assume that the dollar in 1996 is an acceptable starting point for making long range projections of global gold demand.

This past year – 1997 – has been a very different matter. The U.S. dollar rose almost 15% against the exchange rates of the principal industrialized countries by mid-year 1997. Given the lags between changes in the real price of gold and fabrication demand, it is too early to assess the impact of recent dollar strength on G-10 gold demand. But one thing is sure, such dollar strength has caused the price of gold in foreign currencies to fall by less than it has in U.S. dollars. Over time, a smaller decline in the price of gold in those currencies will result in less of an increase in gold demand abroad than it will in the U.S. We should add that, at the current dollar exchange rate, gold demand in the other G-10 countries and thereby gold demand world wide would be somewhat less at \$385-\$388 gold than it was in the 1994-1996 period.

We must ask, was this further rise in the dollar in 1997 against these industrialized country currencies sustainable? In our view, definitely

Therefore, at a minimum we can assume the dollar was not seriously undervalued in 1996. This makes 1996 an acceptable starting point for making long range projections of global gold demand.

The U.S. dollar rose an additional 15% by mid-year 1997.

This further rally brought the dollar to the upper end of its prior 10-year range. Trade flows follow exchange rate changes with a long lag. Even if one excludes the recent devaluation of the emerging Asian currencies, in time the U.S. trade and current account deficit should widen and approach the peak levels of the mid-1980s. Such a near record deficit would surely not be sustainable.

An extraordinary cyclical asynchrony between the U.S. economy and its European and Japanese counterparts now prevails; this has resulted in very positive short-term interest rate differentials which have supported the dollar. This cyclical asynchrony may persist for a while, but in time we can expect this extreme asynchrony to end or even reverse. Then the dollar should fall.

not. This further rally in the dollar brought the dollar exchange rate to the upper end of its prior 10-year range. More importantly, trade flows follow exchange rate changes with a long lag. Even if one excludes the recent devaluation of the emerging Asian currencies, in time the U.S. trade and current account deficit should widen and approach the peak levels of the mid-1980s. If such current account deficits of 3% of GDP were deemed unacceptable in the mid-1980s when the U.S. was still a creditor nation, eventually they should be deemed unacceptable now that the U.S. has become the world's largest net debtor nation.

Why is the dollar at "too high" a level against the other developed world currencies? The U.S. economy has been at full employment, requiring fairly high real dollar interest rates. The European and Japanese economies have been stagnant with high levels of unemployed resources characteristic of recessions. Nominal and real interest rates in these foreign currencies have been lower than in the U.S. An extraordinary cyclical asynchrony between the U.S. economy and its European and Japanese counterparts now prevails; this has resulted in very positive short-term interest rate differentials which have supported the dollar.

This cyclical asynchrony may persist for a while, but in time we can expect this extreme asynchrony to end or even reverse. Then the dollar should fall against these major industrialized currencies to a level that would generate a more sustainable current account position. It is for these reasons that, prior to the Asian currency crisis of mid-summer 1997, we viewed the dollar exchange rate in 1997 as too far above its long-term equilibrium to use it for making long-term gold market projections.

THE IMPACT OF THE ASIAN CURRENCY CRISIS ON GOLD DEMAND

We must consider two issues involving the Asian currency crisis and gold demand. First, how much of an adverse shock has this crisis been to gold demand? Second, does this crisis change the long-term outlook for growth in Asian gold demand or is it a transitory problem that has created a hiatus in a longer term stable trend?

Regarding the first of these two issues, the Asian currency crisis has been an unmitigated disaster for the gold market. It has decimated one of the bastions of private gold demand. It may have forced some distressed Asian countries to sell official gold reserves.¹ Over the period

¹ We believe that some of the undisclosed accumulation of gold reserves in the region may have been liquidated during the Asian currency crisis.

1994-1996 an equilibrium in the gold price was reached that involved dishoarding and “mobilization” by the official sector in the West, on the one hand, offset by accumulation in the East, on the other. The Asian currency crisis has crippled a significant share of Eastern demand and in some cases turned the East into a seller. We estimate that, by late 1997, the Asian turmoil may have taken almost \$40 off the gold price.

To understand what has happened in Asia, we must place the region’s currency and financial shock in the context of the analysis of gold demand elucidated earlier in this book. A currency crisis such as the current one has three negative impacts on private gold demand: A price elastic effect, an income effect, and an asset or dishoarding effect. We will consider each in some detail.

Before doing so, it is useful to relate the current crisis in Asia to two prior currency crises in Mexico and Turkey respectively. In both cases, there was a deep devaluation, a financial crisis which created severe illiquidity for private economic agents, and a significant contraction in income, output and employment. In both cases, there were large declines in gold demand: Gold demand fell year-over-year by 33% in Mexico and 50% in Turkey. In both cases it took five quarters before demand began to recover and roughly two years for a full recovery to take place.

THE PRICE EFFECT

It is a bit fruitless to look at the devaluations of the Asian currencies and try to calculate their precise price effect on gold demand; these currencies are fluctuating vastly week by week and they will continue to do so. It is best simply to understand the mechanisms involved.

Let us take Korea as an example. The won has depreciated from 800 to roughly 1,600. While this has occurred, the dollar price of gold has fallen from \$388 to below \$300, roughly a 25% decline. The price of gold in won has appreciated from 310,400 won an ounce to 463,600 won an ounce. This constitutes a 50% increase in the nominal won price of gold.

However, in any country which experiences so deep a currency devaluation, import prices surge and there is some degree of offsetting domestic inflation. Because the Asian economies have had little inflation in the past, inflationary expectations are much less volatile than they are in countries like Mexico or Turkey. Excluding Indonesia,

In both Mexico and Turkey there was a deep devaluation, a financial crisis and a significant contraction in income. Gold demand fell year-over-year by 33% in Mexico and 50% in Turkey. It took five quarters before demand began to recover and two years for a full recovery.

The price of gold in Korean won has appreciated 50%.

Inflation expectations in Korea are probably on the order of 10%. This implies a 40% rise in the perceived real won gold price. A 40% rise in the real won gold price would lower demand in ounces by somewhat more than 20%.

Recalling Chapter Four, we cited three short run price “sensitivities”: A short run “sticker shock” abatement of final end user demand; a short run, price-induced, value-oriented inventory disinvestment by East Asian commercials; and lastly, an outright decline in inventory demands owing to the decline in end-user demands.

We would not be surprised if the combination of these three short run price effects turned a 20% plus decline in long run gold demand at an annual rate into a short run decline of 50% and possibly much more.

So much for the effect of a rising gold price. There is also an income effect: If incomes in Korea fall by 5% as we expect, this alone may cause gold demand to fall by almost 10%.

there has been only a very limited inflation response to the devaluations in Asia to date, though we should expect that such responses will increase. At the moment, inflation expectations in Korea for example are probably on the order of 10%. A 50% nominal rise in the won price of gold probably implies a 40% rise in the perceived real price.

What is the demand response to a 40% rise in the real won price of gold? Going back to Chapters Four and Five, we must distinguish between the long and short run price elasticities of gold demand. Because there are more purchases of bar and crude jewelry in a country like Korea or Thailand than there are in the more advanced industrialized countries, gold's long run price elasticity of demand is probably higher than our estimate of the world average of .67. We might guess that a 40% rise in the real won gold price would lower demand in ounces by somewhat more than 20%.

That is the long run price effect. What about the short run effects? Recalling Chapter Four, we cited three short run price “sensitivities”: A short run “sticker shock” abatement of final end user demand; a short run inventory disinvestment by East Asian value-oriented commercials, and lastly an outright decline in inventory demands owing to the decline in end use demands. The latter inventory effect is not widely acknowledged, but it is probably the most important short-term negative for overall demand.

We cannot quantify these short run effects, but we would not be surprised if they turned a 20% plus decline in demand based on longer run price elasticities into a shorter run decline in demand of 50% at an annual rate and possibly much more. Of course, over a year these short run effects will abate and demand will rise to the level determined by its long run price elasticity.

THE INCOME EFFECT

In Chapter Six we argued that gold demand rises more rapidly than GDP as per capita incomes rise. In effect, gold has an income elasticity of demand that exceeds unity. This implies that, if incomes fall, gold demand will fall faster. If incomes in Korea fall by 5% as we expect, this alone may cause gold demand to fall by 10%. The decline in Korean incomes has just begun. The big layoffs and wage income declines lie largely ahead. However, the spectre of recession may have already caused households to severely curtail expenditures on discretionary items like jewelry.

THE ASSET EFFECT

At the onset of the Asian currency crisis, it was widely believed by gold bulls that this crisis would help gold demand because it would cause domestic households to flee their failing currency and domestic asset markets for gold. The historical record says just the opposite. When such crises occur in these countries, hoarding of gold not only declines; it turns into outright dishoarding. We see this in the response of these countries to prior periods of stock market turmoil.

There is also an asset effect in such crises. The historical record says that when currency and financial crises occur in these countries, hoarding of gold not only declines, it turns into outright dishoarding.

Hong Kong experienced a severe stock market decline after Tianamen Square in mid-1989. Bar hoarding collapsed in its aftermath.

Gold Bar Hoarding: Hong Kong ¹ (tonnes)									
1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
-2.0	19.0	30.0	-13.0	12.0	10.0	2.0	3.0	2.0	-2.5

1) Source: GFMS

Taiwan had an 80% decline in its stock market that began in late 1989. A similar precipitous collapse in bar hoarding followed.

Gold Bar Hoarding: Taiwan ¹ (tonnes)									
1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
73.7	150.5	138.0	41.0	26.0	17.0	7.0	8.0	9.1	0.5

1) Source: GFMS

The Japanese stock market began its great fall in early 1990 and remained weak for years. Bar hoarding fell less dramatically, but the decline persisted for years. It is noteworthy that, once interest rates fell to very low levels and there was a run on the banking system in 1995, bar hoarding demands resurfaced temporarily.

Gold Bar Hoarding: Japan ¹ (tonnes)									
1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
129.0	168.5	119.1	75.5	59.0	43.5	31.0	58.0	129.0	25.0

1) Source: GFMS

In such cases, economic agents, faced with severe illiquidity, may dishoard their gold.

However, households in these countries are loathe to relinquish their gold under such times of crisis.

Commercial inventory dishoarding is far more significant in Asia today than investor dishoarding.

In very severe cases, such as the current one, economic agents, faced with severe illiquidity, dishoard their gold. There have been endless stories of such dishoarding in the current crisis. In the third quarter, Thailand actually was a net seller of gold, suggesting significant dishoarding. More recently there have been campaigns in Thailand and Korea to collect gold for the state to sell abroad to help meet the currency crisis.

There is no doubt that such dishoarding is real. It is our guess, however, that it is exaggerated. We believe that households in these countries are loathe to relinquish their gold under such times of crisis and that there is some offsetting fresh hoarding of gold provoked by the crisis.

In Chapters One and Four we stressed the extremely high levels of inventory in the gold jewelry business and the huge swings in inventory demands that are created by significant changes in end use jewelry demands. Twenty or 30% declines in end use jewelry demands such as are now occurring in Southeast Asia generate massive dishoarding of inventories held in the fabrication and distribution of gold jewelry. This is all the more so when there are severe banking crises as now prevail in Asia, since such crises lead to a curtailment of working capital credit to gold jewelry fabricators and distributors.

It is our guess that inventory dishoarding is far more significant in Asia today than investor dishoarding. The latter is cited as a principal cause of the collapse in gold demand only because the former – inventory demand – is ignored by market analysts.

QUANTIFYING THE ADVERSE IMPACT FROM THE ASIAN CURRENCY CRISIS

In 1996 the countries most affected by the East Asian currency crisis – Korea, Indonesia, Malaysia, the Philippines and Thailand – consumed more than 400 tonnes of gold. Had the East Asian crisis not occurred, at \$300 gold with a typical 6% rise in incomes, gold demand in these countries would have risen by roughly 100 tonnes to a 500-tonne annual rate.

The third quarter collapse in demand in the Asian countries reflected a combination of investor dishoarding, commercial inventory liquidation, and a large decline in end use demands. With Korea now having fully joined in the crisis (it had not yet done so in the third quarter), overall gold demand in these five countries may have fallen

Considering these three effects, gold demand in Korea, Indonesia, Malaysia, the Philippines and Thailand may have fallen to as little as 100 tonnes at an annual rate. This constitutes a fall of as much as 400 tonnes at an annual rate relative to where such demand would have been at \$300 gold. This alone has reduced the gold price by roughly 6% or more than \$20.

to as little as 100 tonnes. This constitutes a fall of as much as 400 tonnes at an annual rate relative to where such demand would have been had the crisis not occurred. This is equal to almost 10% of global gold demand. This alone would reduce the gold price by 6%, or more than \$20. In addition to this decline in private demands, we believe that one or more Far East Asian central banks may have sold gold to meet runs on their currency. Overall we believe that the Far East Asian currency crisis may have chopped almost \$40 off the gold price in late 1997.

How long will this drag on global gold demand last? The Mexican and Turkish experiences are probably useful guides. In both cases the deep depression in gold demand lasted a little more than a year, with a full recovery in two years. In the case of East Asia, we expect a more V-type path for demand. The decline in Turkish demand exceeded that of Mexico because Turks fabricate and hoard more gold than Mexicans, leading to more inventory and household dishoarding. The same is the case for the Far East Asian countries.

However, the Far East Asian crisis is more severe. There is less domestic inflation to offset the currency depreciation. Therefore, the rise in the real price of gold in East Asia may be more extreme, leading to greater curbs on end use jewelry demand which in turn creates greater inventory dishoarding. Also, the banking crisis may be having more severe effects on a highly indebted corporate sector, leading to greater dishoarding by fabricators and retailers of gold products.

Though the downside pressures on gold demand in East Asia exceed those of Mexico and Turkey a few years ago, the economies of East Asia should recover more rapidly. As we show in the appendix to this chapter, the Mexican and Turkish crises were warranted by the macroeconomic fundamentals; these Asian crises are not. This will soon become apparent in massive current account surpluses that will be intolerable to East Asia's trading partners, principally the U.S. Recoveries in these currencies will occur far sooner than anyone expects. East Asian gold demand will recover when the economies and currencies of the region recover.

We believe that inventory and household dishoarding in these countries will run their course in six months to a year from the onset of the crisis. If the Asian currencies do not recover after such inventory and household dishoarding run their course, the longer term price and income effects will lower gold demand in the second half of 1998 by 30%, or 120 tonnes annually, from 1996 levels. This implies a recovery

Some sales of official gold by distressed Asian central banks has further depressed the gold price.

Inventory and household dishoarding in these countries will run their course in six months to a year from the onset of the crisis. If the Asian currencies do not recover, the long-term price and income effects will lower gold demand in the second half of 1998 by 30%, or 120 tonnes annually, from 1996 levels. This implies a recovery of almost 300 tonnes off the late 1997/early 1998 lows. We expect a large recovery in these currencies and some recovery in income in the second half of 1998. By year-end 1998, the drag on global gold demand from the Asian crisis will have run its course.

ery of almost 300 tonnes at an annual rate off the late 1997/early 1998 lows. Since we expect huge current account surpluses to be undeniably evident by the second quarter of 1998, we expect a large recovery in these currencies and some recovery in income in the second half of 1998. We would expect that any distress gold sales by central banks in the region will be over by mid-year. By year-end 1998, almost all of the drag on global gold demand from the Asian crisis will have run its course.

WHAT IS THE LONG-TERM GROWTH OUTLOOK FOR GLOBAL GOLD DEMAND?

In Chapter Six we showed that, for a constant real gold price, the trend rate of growth of global gold demand has been on the order of 5% per annum or more. We asked why the secular trend of gold demand is so high.

High economic growth in emerging Asia was key. Gold's primary use is in jewelry. This makes it the only commodity that is primarily a final consumer product. Furthermore, it is a luxury consumer product – that is, people tend to consume more of it as a percent of their income as their incomes rise. Perhaps more importantly, at least in recent decades, the ratio of gold consumption to income is far higher in emerging Asia than it is elsewhere in the world. Because the emerging Asian economies grow much faster than the OECD economies, there is an ongoing global mix shift that raises the ratio of global gold consumption to global income over time. These two effects – the luxury goods effect and the global income shift effect – cause the demand for gold to grow faster than global GDP.

With the currency crisis in Asia, many Western analysts are predicting an end to Asia's rapid growth. Asia's growth miracle, they claim, was a mirage. It was based on government intervention that was bound to fail. It was fueled by excesses of debt that were bound to come a cropper. Now, forced to adopt Western *laissez faire*, free market capitalism, Asia's growth will be less but more durable.

We completely disagree with this emerging consensus. From our perspective, the macroeconomic fundamentals of Asia are excellent. Savings rates are sky high. There is rapid human capital deepening. Fiscal accounts are in balance. Inflation has been low. These countries have all built excellent export machines. Asia overall has been the

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world's largest current account surplus bloc. The excessive current account deficits of Malaysia and Thailand have been exceptions and they are already a thing of the past.

Asia has one vulnerability: debt. Asia has the highest savings rates in the world. Asia's savers are risk averse. They save by way of bank deposits. This necessitates a very high ratio of bank intermediation to GDP. Asia's thrifty households tend to eschew consumer debt. Fiscal balances obviate the need for government borrowing. Asia's huge bank-mobilized savings go for productive investment via corporate lending.

The Asian development state has high degrees of corporate financial leverage. The Asian countries have been able to keep this huge scaffold of debt delicately balanced because of close cooperation between government, banks and firms. Asia's Achilles' heel was exposing itself to mobile foreign capital. Such capital had none of the commitments to the nation state that Asia's domestic market participants do. When such mobile capital finally turned tail and ran, it tore the delicate financial fabric of the Asian development state. This is the essence of the current crisis in Far East Asia.

The Asian development state is the greatest economic success story since the onset of the industrial revolution. Asians know it works. Short-term compromises need to be made with external balance of payments lenders, but, once huge current account surpluses in the region restore stability, the Asian economies will continue on the same fast growth track employing the same policies of the past. We understand that this position is very controversial; for this reason we are including in this book a lengthy paper on the long run outlook for Asian growth as an appendix.

Rapid Asian economic growth has occurred because the Asian economies have advanced rapidly toward the more advanced economic status of the U.S. The engine of this growth has been gains in productivity in tradable goods that have greatly exceeded those of the developed world. These productivity gains have increased the international competitiveness of these countries. As we explained earlier, such rapid gains in productivity and competitiveness require a long run depreciation of the dollar against the currencies of such high productivity emerging economies. In the past, such secular dollar depreciation against emerging Asia caused the real price of gold in

Asia has one vulnerability: debt. Asia has the highest savings rates in the world. Asia's savers are risk averse. They save by way of bank deposits. This necessitates a very high ratio of bank deposits and loans to GDP.

The Asian development state has high degrees of corporate financial leverage. The Asian countries have been able to keep this huge scaffold of debt delicately balanced because of close cooperation between government, banks and firms. Asia's Achilles' heel was exposing itself to mobile foreign capital. Such capital had none of the commitments to the nation state that Asia's domestic market participants do. When such mobile capital finally turned tail and ran, it tore the delicate financial fabric of the Asian development state.

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these emerging Asian economies to fall relative to the real dollar price of gold. This stimulated growth in gold demand in these countries. When Asia recovers, its superior trend productivity gains will re-emerge. With this will come a renewed tendency for the dollar to depreciate “in real terms” against these currencies. Once again, by lowering the price of gold in these countries relative to the dollar price, it will stimulate Asian gold demand on a trend basis.

The regional composition of Asian growth will change. Some of the more advanced Asian economies like Korea will grow more slowly since they have less “catching up” to do. But others like China, Vietnam, and the like will continue to grow very fast. In fact, after four years of adjustment, China, which is closed to the external capital flows that are destabilizing the rest of Asia, is especially well poised for future growth.

As this occurs, we will see bar hoarding in the least advanced countries give way to demands for adornment jewelry over time, but the ratio of gold consumption to GDP will remain high. This will cause global gold demand to continue to outpace global GDP.

Intensity of Gold Use in Asia and the Middle East, 1994 By Stages of Economic Development¹		
	GNP (U.S. \$) per capita	Consumption per capita⁴
India	1,280	.436
China ²	2,510	.092
Indonesia	3,600	.174
Turkey	4,710	.374
Thailand	6,970	.377
Malaysia	8,440	.183
South Korea	10,330	.284
Taiwan ³	10,570	.565
Hong Kong	22,950	.371

1) Sources: World Gold Council, World Development Report 1996 and 1997, Taiwan Council for Planning and Development Data Book, 1996

2) Remember, WGC data understates Chinese gold demand

3) Data is for 1995; 1994 data not available

4) Gold jewelry and bar consumption only

This pattern of sustained high gold intensity of use has been repeated in country after country in the Far and Middle East. Both the high per capita income as well as the low per capita income countries of Asia exhibit high ratios of gold consumption to GDP. In the poor countries bar hoarding predominates. It did as well in the past in the now economically advanced Tigers of Asia. In these latter countries, gold consumption relative to income remains high because, with increasing affluence, bar hoarding has been replaced by high levels of

adornment gold jewelry purchases. China will provide the largest increment to Asian regional incomes in absolute terms. As for China's gold demand, the World Gold Council (WGC) underestimates current demands. Nonetheless, Chinese demand for gold is depressed by restrictions on the distribution of gold within China. Like the rest of Asia, China will probably liberalize its gold market. The WGC estimates that, were such liberalization to occur today, China's gold demand would exceed 1,000 tonnes. Something like this will probably occur over the next decade. This alone will raise global gold demand appreciably.

Though, from the perspective of the prevailing chaos in Asia, this view may seem far too positive for Asian gold demand, less than a year ago it would not have been seriously questioned. When Asia's current account surpluses explode and its currencies recover, it will appear like a perfectly reasonable expectation once again.

CONCLUSION

We started this chapter in quest of guidelines for making long run gold market projections. We conclude the following:

1. In 1996, the dollar exchange rate was close to a medium term equilibrium. Global economic variables were near trend levels. The period 1994-1996 constitutes a stable platform for making long projections in which annual global gold demand was somewhat more than 1,000 tonnes above mine and scrap supply.
2. The Asian currency crisis has hurt global gold demand by perhaps 400 tonnes at an annual rate and has added to official sector sales. In six months this negative impact will diminish to less than half its current value. By 1999, Asia's contribution to the gold market will be normalized.
3. Despite the current chorus proclaiming the end of the Asian growth miracle, after a year of hiatus Asian growth will proceed at its former pace. Asian incomes will increase as a share of global income. Asians will continue to consume several times more gold per unit of income than the developed West. These two factors – above-average Asian income growth and very high intensities of gold use in Asia – will result in a continuation in the future of the very high trend rate of growth of gold demand of recent decades. ◆

Asian incomes will increase as a share of global income. Asians will continue to consume several times more gold per unit of income than the developed West. Above-average income growth and very high intensities of gold use in Asia will result in a continuation of the very high trend rate of growth of gold demand of recent decades.



CHAPTER 8

FUTURE GOLD SUPPLY / DEMAND BALANCES

***I**n the last two chapters, we focused on long-term trends in gold demand. In this chapter we will look at the likely long run future trend in mine supply.*

With such forecasts for demand and supply, we will begin the process of long range projections. At this stage, we will hold the real gold price constant; our demand and supply projections result in an ever widening supply/demand deficit over time. This chapter is quite short and a fairly easy read.

THREE PERCENT PER ANNUM GROWTH IN GLOBAL MINE SUPPLY

We have just made long run projections regarding growth in global gold demand. It is now time to focus on long run trends in mine and scrap supply.

In the first half of 1997, there was endless bearish talk about excessively rapid growth in mine supply. Paul Burton of the Mining Journal was looking at more than a 45% increase in mine supply over a five to six year period. The Gold and Silver Institute predicted growth in mine supply of more than 4% per annum.

In the first half of 1997, there was endless bearish talk about excessively rapid growth in mine supply. First, Busang was supposed to produce 200 tonnes of gold per annum by the early 2000s. In a speech at the Financial Times World Gold Conference in Prague in June, Paul Burton of the *Mining Journal* estimated that gold mine production would increase by 18.8 million ounces per year in the next few years. A few years further out he saw another 15.6 million ounces. All together, he was looking at more than a 45% increase in mine supply over a five to six year period. There were other predictions of large mine supply increases; the Gold and Silver Institute predicted an average growth rate in mine supply net of depletions of more than 4% per annum in coming years.

Now, at \$300 gold, participants in the gold industry expect that production will suffer an outright decline.

Now, at \$300 gold, we no longer hear about rapid growth in mine supply. Numerous mines have been closed. More and more projects in the pipeline are being deferred. Mining companies are talking about rationalizing operations; planned shifts to high grade ores often imply lower rates of production in the future. Increasingly, participants in the gold industry expect that depletions and exhaustions will exceed new mine startups and expansions at current gold prices and production will suffer an outright decline.

We believe that current deeply depressed gold prices are not sustainable. We are really interested in the long run rate of mine supply growth at much higher price levels.

As we argue throughout this book, we believe that current deeply depressed gold prices are not sustainable. More importantly, over a five year time horizon, we believe the odds favor a gold price that is well above anything we have seen in this decade. From this perspective, what we are really interested in is the long run rate of mine supply growth at much higher price levels.

As we explained in Chapter Five, history tells us that mine supply growth over such longer time periods is likely to be quite low and that it will be more a function of discoveries and technological change than the price of gold. Over almost two centuries, the real price of gold has risen at a marginally positive rate. Amidst this, mine supply growth averaged 2.85%. Over the two and a half decades through 1996, amidst a three-fold increase in the real price of gold, mine supply growth averaged only 1.8%.

History says that such gold is simply not easy to find. The nominal dollar gold price averaged roughly \$380 at the beginning of this decade. A marginally positive annual increase in the real price of gold since then would result in a nominal price of gold well in excess of \$450 today and considerably more by the end of the decade. History suggests that, even at such a high price, gold mine supply might be growing at only 2.8% per annum with gold in the mid \$400s at the end of this decade.

The last few years tend to confirm this. The gold price averaged \$386 throughout the three-year period of 1994-1996. This was roughly the same nominal price of gold that prevailed at the beginning of the decade. In real terms, of course, the gold price had fallen somewhat from the beginning to the middle of the decade. Historical trends would suggest that, under such conditions, gold mine supply might have fallen slightly below its 2.8% per annum long run historical average.

However, the early 1990s were still benefiting from the surge in mining exploration that followed the giant 24-fold rise in the nominal dollar gold price of the 1970s. Also, the impact of heap leach technology, which made gold extraction from low grade ores economic, was still in full force. This should have helped growth in mine supply; yet, by the mid 1990s, gold mine production had fallen to a 1.2% per annum rate.

History suggests that gold mine supply might be growing at only 2.8% per annum with gold in the mid-\$400s at the end of this decade.

The last few years tend to confirm this. The gold price averaged \$386 throughout the three-year period 1994-1996. Yet, by the mid-1990s, gold mine production had fallen to a 1.2% per annum rate.

Growth In Global Gold Mine Supply 1992-1996						
	1992	1993	1994	1995	1996	Annual average rate
Mine Production	2,232	2,289	2,278	2,269	2,346	
Percentage Change		+2.6%	-0.5%	-0.4%	+3.4%	1.2%
Average gold Price	344	360	384	384	388	

What then should we make of the many forecasts of extremely rapid mine output that prevailed early this past year? If the gold price rises to the \$386 average of the 1994-1996 period, should we expect annual increases in mine supply that exceed this long run historical average of 2.8%?

First, some of the forecasts of rapid mine supply growth that prevailed early in the year were based on alleged exploration successes that have not materialized. We all now know that Busang, which was supposed to produce 200 tonnes per annum by the early 2000s, was a fraud, and that several of the other supposed major discoveries were frauds. Prior to these revelations, the gold mining industry began to believe that 260-odd drill holes could indicate a resource equal in

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The Mining Journal forecast appears to have two flaws. First, it appears to be derived from a literature search which may reflect the characteristically optimistic views of many mining companies. Second, it is a compilation of new mines, with no reference to depletions and exhaustions.

ounces to what has been found in a typical greenstone belt encompassing a dozen or several dozen major mines. This equivalent to “gold growing on trees” has now been dispelled.

But we still have surveys by Paul Burton of the *Mining Journal* and the survey of the Gold and Silver Institute that forecast well above-average growth in mine supply at the higher gold prices of 1994-1996. The *Mining Journal* forecast appears to have two flaws.

First, it appears to be derived from a literature search which may reflect the characteristically optimistic views of many mining companies. Second, it is a compilation of new mines with no reference to depletions and exhaustions.

We do not know the complete pipeline inventory of new mining projects compiled by the *Mining Journal*, but some of the most notable forecasts appear to be unrealistically optimistic. For example, Paul Burton had the huge Suki Log project in Russia scheduled for 2 million ounces of production by 2000. At the time, Suki Log was being delayed by title problems. It still is. We understand Suki Log still does not have a proper feasibility study. A financing package is further away. We hear that stripping the overburden once the project is initiated may take years. Even from the vantage point of early 1997, 2 million ounces from Suki Log by 2000 just did not seem very probable.

In general, gold mines take longer than is initially expected to get up and running, and characteristically there are initial production difficulties that delay full production. Paul Burton's pipeline might be more or less accurate, but the development of the projects he sees in the pipeline is likely to occur over a longer period than the five or six years he envisions. Of course, there will be some short-gestation, new mining projects and some major expansions that are not visible right now. However, they should not be too material, as most mine developments take years from initial discovery to production. Burton's pipeline may still result in a 45% overall increment to mine production on a gross basis, but it might be spread out over a somewhat longer period. An apparent 7% annual growth rate in production from such new projects might in fact turn out to be a 6% or even a 5% rate.

The more critical issue, however, is the role of depletions or exhaustions. The 1980s and 1990s brought many new mines on stream. However, it was depletions in South Africa and Russia, which account-

Paul Burton's pipeline might be more or less accurate, but development of the projects he sees in the pipeline are likely to occur over a longer period than the five or six years he envisions.

The more critical issue, however, is the role of depletions or exhaustions. It was depletions in South Africa and Russia that lowered the 25-year average rate of global mine supply growth to only 1.8% in the period 1971-1996.

ed for 80% of global mine output in 1971, that lowered the 25-year average rate of global mine supply growth to only 1.8% in the period 1971-1996. These depletions have been ongoing and were in part responsible for the low rate of growth of mine supply in the mid-1990s.

How important are depletions and exhaustions on an ongoing basis? The average North American mining company probably has reserves equal to 15 years of production.¹ However, these reserves reflect contained, not recoverable, ounces. On average, recovery rates for these companies must be on the order of 80%, implying reserve lives of only 12 years.

Of course, we know that the true lives of these mines exceed their reserve lives. For most deep underground mines, it is not economic to drill out more than a few years of mine life, even though many of these mines tend to last for decades. For new bulk tonnage mines, companies often prove up only what is needed to get a mine up and running, and then prove up additional reserves once the mine is in full production. By contrast, for fairly mature mines, proven reserves tend to reflect the actual life of the mine. And there are many cases when the stated reserves of mature mines for one reason or another turn out not to be recoverable.

What then is the true life of the world's mines? The South African mines, being deep mines, may have longer lives than those owned by the North American producers. By contrast, the Australian mines have shorter lives. The 12-year mine life based on proven recoverable reserves of the North American companies is probably the global average. True mine lives are surely much longer than this 12-year average, but they are unlikely to be 100% longer. We have asked knowledgeable people in the industry what such true lives might be and, for many, on average a 30%-50% longer mine life than stated reserve life seems plausible. Such a 17-year mine life implies a rate of depletion or exhaustion equal to roughly 6% of annual production. That is a big number.

Of course, mine supply tends to rise; the volume of mine output that was initiated 17 years ago was less than it is today, and it is these mines where depletions and exhaustions will occur today. In the years to

We estimate that the true lives of the world's mines are on the order of 17 years. This implies an annual rate of depletion or exhaustion equal to roughly 6% of annual production.

Mine supply tends to rise; the volume of mine output that was initiated 17 years ago was less than it is today. In the years to come, it will be the mid to late 1980s mines that will contribute most to losses from depletions and closures. This implies a depletion and closure rate of perhaps 4% to 5% of annual mine supply or more than 100 tonnes per annum.

This would offset perhaps two-thirds of Burton's pipeline of 34.4 million ounces of new mine production over this time period. It would imply an annual rate of growth of future mine output that would be well below the 2.8% per annum long run historical average.

¹ Scotia McCleod estimates the average mine life of the North American producers exceeds 21 years at \$380 gold. However, this average includes wholly new projects in the pipeline; it is not an average of the mine lives of currently operative mines.

come, it will be the mid to late 1980s mines that will contribute most to losses from depletions and closures. This implies a depletion and closure rate of perhaps 4% to 5% of current annual supply, or more than 100 tonnes per annum in coming years. Over a six to seven year time horizon that might be realistic for Paul Burton's pipeline, this would imply aggregate depletions and exhaustions of perhaps 700 tonnes, or 22.4 million ounces. That could offset perhaps two-thirds of Burton's pipeline of 34.4 million ounces of new mine production over this time period. It would imply an annual rate of growth of future mine output of 2.1% to 2.5%. That rate would lie between the 2.8% per annum long run historical average rate and the 1.8% average rate since 1971.

One is still faced with the Gold and Silver Institute's survey, which envisioned more than a 4% average rate of mine supply increase over the period 1997-2000.

Mine Production Forecast (in thousands of troy ounces)					
	1996 Actual	1997 Projected	1998 Projected	1999 Projected	2000 Projected
World Total	74,851	78,332	87,373	85,833	88,185
Equivalent Metric Tons	2,328	2,436	2,562	2,670	2,743
Change from Previous Year	3%	5%	5%	4%	3%

These estimates are compiled from major mining companies and are net of depletions. In the past, the Silver Institute's forecasts have tended to be fairly accurate, though they have diverged from the actual outcome by two percentage points or so in some years.

We have discussed this forecast with one major mining analyst who conducted a survey of the major North American producers; this analyst's conclusion was that, for these companies as a group, their net mine production was likely to be much less than the Gold and Silver Institute forecasted. From this analyst's perspective, at \$385 gold, gold mine supply would have grown at a somewhat lower rate through the end of this decade. For the Gold and Silver Institute, 1997 and 1998 were to be years of especially large increases in mine supply, with a 5% increase forecast for 1997. According to Gold Fields Mineral Service, Ltd. (GFMS), mine supply was up at only a 1.4% rate in the first half of 1997. Due to the long lags in mine supply, first-half 1997 mine performance would not have been adversely affected by the decline in the gold price this past year. This suggests that the Gold and Silver Institute's forecast of a 5% increase in 1997 was too high.

For the Gold and Silver Institute, 1997 and 1998 were to be years of especially large increases in mine supply, with a 5% increase forecast for 1997. We have looked at the Gold and Silver Institute's forecasts for mine supply on a country by country basis. In many cases, the company projections submitted to the Gold and Silver Institute look too optimistic.

According to GFMS, mine supply was up at only a 1.4% rate in the first half of 1997. This past year's collapse in the gold price will surely reduce future mine supply. Some mines which are being closed may never reopen. Moves to high grade mines will shorten the lives of these mines. Mining companies will be more cautious about initiating new mining projects once the gold price recovers. Bankers will be more cautious when higher prices return.

We have looked at the Institute's 1997 forecasts for mine supply on a country by country basis. Certain planned large projects in countries with limited gold mine production are very visible in these forecasts. We have checked some of these projects out and it is quite clear that, in many cases, the company projections submitted to the Gold and Silver Institute were too optimistic. Once again, the Gold and Silver Institute survey probably telescopes the pipeline of projects into too few nearby years.

This year's collapse in the gold price will surely reduce future mine supply. Some mines which are being closed may never reopen. Moves to high grade mines at current low prices will tend to shorten the lives of these mines, leading to earlier depletions and closures. Mining companies, scared by this year's gold price collapse, will be more cautious about initiating new mining projects with marginal economics once the gold price recovers. And lenders will be more cautious when higher prices return, which will restrain growth in gold mine output.

These factors will slow gold mine production over the next few years if the gold price returns to its nominal average 1994-1996 level of \$386. But what will happen if the real dollar gold price recovers to the average levels of the beginning of this decade, which implies a nominal dollar gold price well in excess of \$450 in nominal terms? The long sweep of history says that global mine supply growth will be on the order of 2.8%, even with gold well above \$450. The trend in mine supply over the last several decades suggests global mine supply growth under these conditions might be closer to 2% per annum.

However, history also tells us that the growth in mine supply is more a function of new discoveries and new technologies than it is a function of the gold price. It is our guess that the opening of the emerging world and the advent of heap leach technology are two developments that, for a time, are working to raise gold mine production growth above its last several decade average and possibly above its long-term average. It is these developments that are reflected in Paul Burton's and the Gold and Silver Institute's forecasts, even if they assume that these new discoveries will come on stream too early.

The shock of current low gold prices will restrain new mine development for a while when the gold price recovers. In time, however, the new technologies and the opening of emerging world terrain will exert a positive impact on mine output growth. This may not surface for several years on a price recovery, but it will surface.

The shock of current low gold prices will restrain new mine development for a while when the gold price recovers. In time, however, new technologies and the opening of emerging world terrain will exert a positive impact on mine output growth.

We are interested in fairly long run forecasting. It is our guess that gold mine production could rise to a 3%-4% annual rate at much higher prices, after probably a 2% rate in a still cautious \$385-\$400 recovery period. For the purpose of 10-year simulations, we will use a 3% average growth rate in mine output, which is somewhat high by recent historical standards.

In this book, we are interested in fairly long run forecasting that will encompass the much higher equilibrium prices discussed in Chapter Five. For this type of time frame, it is our guess that gold mine production growth could rise to a 3%-4% annual rate at much higher prices, after probably a 2% rate in a still-cautious \$385-\$400 recovery period. For the purpose of 10-year simulations, we will use a 3% average growth rate in mine output, which is high by recent historical standards. It is an average of a low growth period we envision in the aftermath of the bear market of 1996-1997, as well as an eventual future period characterized by much higher prices and, as a consequence, above average growth in mine supply.

WHAT IMPACT WOULD A 3% ANNUAL INCREASE IN MINE SUPPLY HAVE ON THE GOLD PRICE?

In the prior chapter, we did an analysis of the long-term trend in physical gold demand. We concluded that, when the real gold price is constant and world Gross Domestic Product (GDP) is growing at the trend rate of recent decades, global gold demand should grow at roughly 5% per annum.

Over the longer term, we expect global GDP to continue to grow at a 3.5% plus rate. Though the U.S. economy is at full resource use and should experience below-trend growth in coming years, there is huge slack in the economies of Europe and Japan which, over a five-year time horizon, will eventually result in above-trend growth. Despite recent difficulties in Southeast Asia, we expect continued rapid growth in the emerging world. China, which has just successfully completed a program of austerity and disinflation and is now set up for a prolonged expansion phase, should be the first Far East Asian economy to resume rapid growth. The current financial crisis elsewhere in emerging Asia will retard growth severely, possibly for a year or so, but, as we noted in the prior chapter, the determinants of rapid economic growth in these countries remain intact and high economic growth will resume.

Overall, economic growth in those Far Eastern counties where the intensity of use of gold is especially high should continue to outpace growth in the rest of the world. This will result in a continuation of the mix shift in global income toward economies with high intensities of gold use that has caused trend global gold consumption to rise sig-

Over the longer term, we expect global GDP to continue to grow at a 3.5% plus rate. Though the U.S. economy is at full resource use and should experience below-trend growth in coming years, there is huge slack in the economies of Europe and Japan which, over a five-year time horizon, will eventually result in above trend growth.

nificantly more rapidly than global income.

Therefore, the gold market will be able to readily absorb a 3% annual increase in gold demand because of the extremely rapid rate of growth of fabrication demand. To illustrate this point, we will project gold supply/demand forward on the basis of these growth assumptions for demand and mine supply. To make these long-term projections, we are going to ignore 1997, which we regard as a year of unusually high official flows which have caused the gold market to depart from the more stable pattern of recent years. In any year characterized by a sharp decline in the gold price, short run elasticities of demand and scrap cause these variables to depart significantly from their longer run trend values. For this reason we will go back to 1996 as our base year for extrapolating long-term trends. We assume that the unusual central bank selling of 1997 will abate in 1998, and that the Asian shock to demand will pass by the end of the year. By 1999 the gold price will have recovered to its real level of 1996.

We will start with 4,050 tonnes of physical demand in 1996. Going back to Chapter One, we arrived at two estimates of retail or “trade” demands for 1996 (3,998 tonnes and 3,928 tonnes). We assumed that, in 1996, there were no positive inventory demands. We estimated that, in an average year, inventory demand would average perhaps 400 tonnes a year overall. Half of this increment is included in these estimates of retail or “trade” demands; the other half at the fabricator and wholesale portions of the gold product pipeline are not. This suggests trend demand for 1996 of roughly 4,150 tonnes. (This may look like a high figure, but one of our estimates for the prior year was 100 tonnes higher.) To be conservative we will shave their estimate of demand in our base year by 100 tonnes to 4,050.

We assume long-term trend demand growth of 5% per annum. To accommodate the current collapse in Far East Asian demand, we will insert a one year hiatus in this long run trend with no global gold demand growth. This is probably too conservative an assumption. It is possible that the current collapse in the southeast Asian economies may be eventually offset by unusually rapid recoveries, leaving the overall long run trend intact.

On the mine supply side, we use a 2% estimate of mine supply growth for 1997, no increase in 1998, and a 3% compound rate thereafter (which is more than two times the average of the previous four-year

China has just completed a program of austerity and is now set up for a prolonged expansion phase. The current financial crisis elsewhere in emerging Asia will retard growth for a year or so, but the determinants of rapid economic growth in these countries remain intact. Economic growth will resume. Overall, economic growth in those Far Eastern countries where the intensity of use of gold is especially high should continue to outpace the rest of the world.

To make long-term projections, we ignore 1997 as a year of unusually high official flows which have caused the gold market to depart from the more stable pattern of recent years. We will go back to 1996 as our base year for extrapolating long-term trends.

We estimated trend demand for 1996 of roughly 4,050 tonnes.

On the mine supply side, we estimate 2% mine supply growth for 1997, zero growth in 1998, and a 3% compound rate thereafter. As for scrap, we assume declines in scrap supplies in 1997 and 1998, and then assume it returns immediately to a long-term trend that is driven by consumption growth.

1992-1996 period.) In fact, we expect that, owing to the shock of 1997, mine supply will initially grow at a lower rate, even if the gold price recovers, and then exceed this rate at the end of this five-year period as the gold price works higher.

Projected Schematic Supply/Demand Schedule									
	1996	1997	1998	1999	2000	2001	2002	2003	Avg. % change
Demand	4,050	4,600	4,600	4,465	4,688	4,923	5,169	5,427	5.0
Supply:									
Scrap	644	600	600	710	746	783	822	863	5.0
Mine Supply	2,346	2,400	2,400	2,489	2,564	2,640	2,720	2,801	3.0
Mine + Scrap	2,990	3,000	3,000	3,199	3,309	3,423	3,542	3,664	
Deficit	1,060	1,600	1,600	1,266	1,379	1,500	1,627	1,763	

As for scrap, we will assume a decline in scrap supplies for 1997 and 1998 and then assume that scrap supplies return immediately to a trend that is driven entirely by consumption growth. This will probably overstate future scrap supply over this five-year future period, but it is a simplification that is consistent with our overall "model."

The above exercise assumes a constant real gold price of \$388 in 1996 dollars, global GDP growth of 3%-4% (as measured by the IMF), 3% per annum U.S. price inflation, and a return of the dollar exchange rate to its 1996 level.

The conclusion from this exercise is that, owing to gold's strong secular demand trend and inelastic mine supply, the deficit in the gold market would widen from 1,060 tonnes in 1996 to more than 1,700 tonnes by the year 2003, even if the nominal gold price rises 3% a year in U.S. dollars to \$470 by then.

The above exercise assumes a constant real gold price of \$388 in 1996 dollars, global GDP growth of 3%-4% [as measured by the International Monetary Fund (IMF)], 3% per annum U.S. price inflation, and a return of the dollar exchange rate to its 1996 level.

The conclusion from this exercise is that, owing to gold's strong secular demand trend and inelastic mine supply, the deficit in the gold market would widen from 1,060 tonnes in 1996 to well in excess of 1,700 tonnes by the year 2003, even if the gold price recovers from its 1997 bear market to the "real" U.S. dollar level of 1994-1996.

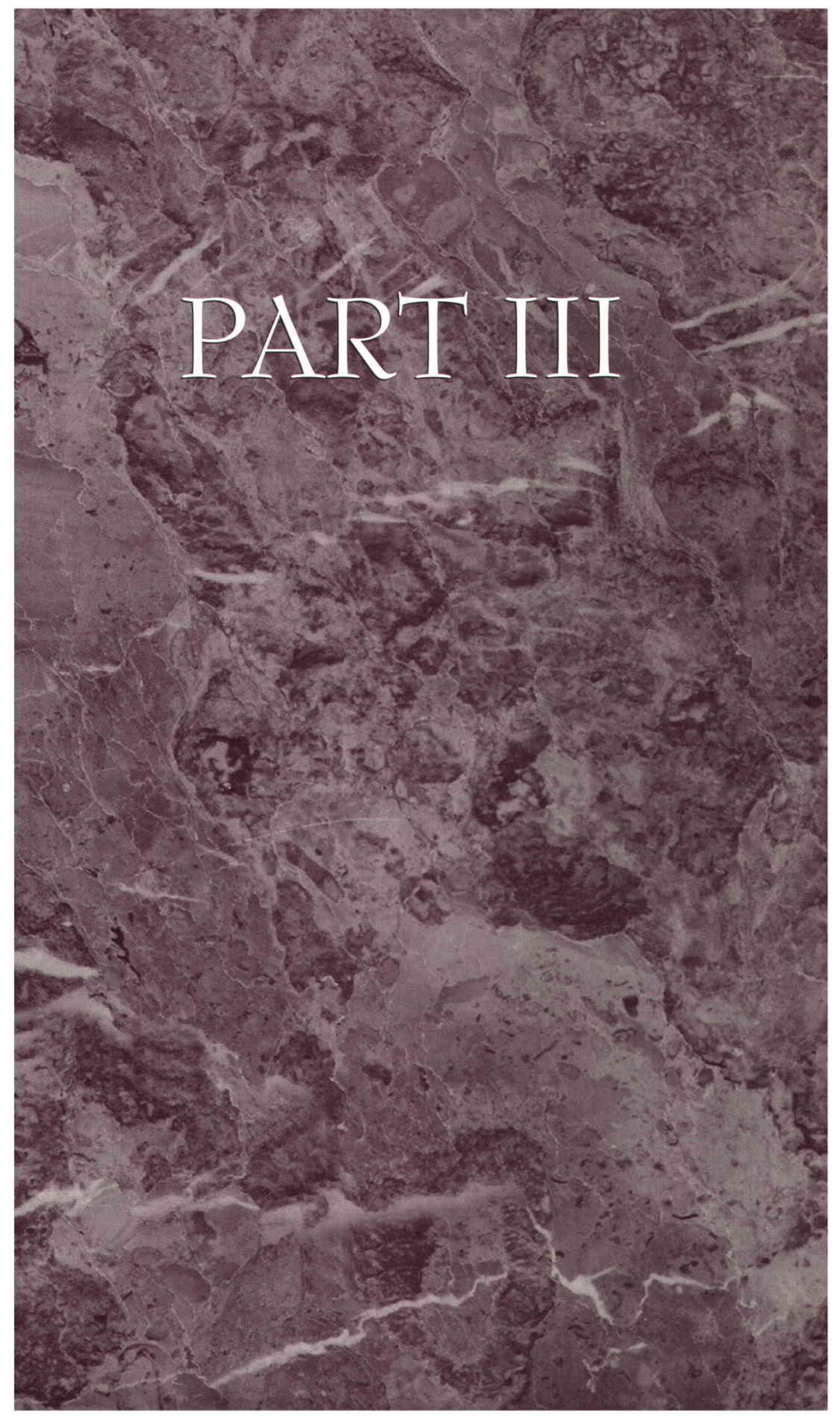
In effect, the rate of flow of central bank gold into the gold market would have to increase steadily simply to restrain the increase in the nominal gold price to roughly \$12 a year on average from 1996's average level of \$388. Whether gold will come out of official coffers at these projected rates on such a sustained basis is, of course, the central issue. Our guess is that it will not and the performance of the gold price over the next five years will exceed this projected constant 1996 real price profile.

Of course, we understand that, in the market's current pessimistic state, no one will believe this conclusion. In our defense, we simply note that:

Our projected 5% secular rate of growth in global gold demand is based on a sound analysis of past trends.

The *nominal* gold price rose in the 10 years from 1986 to 1996 even though the flows from the official sector's hoards went from an annual net purchase to roughly a 1,000-tonne per annum trend rate of outflow. In effect, this projection is entirely consistent with the experience of the past decade.

As regards the validity of our demand projections, our guess is that, in 1997, we will see a level of global gold demand that will be almost halfway toward what we project for 2003, simply because of demand's price elastic response to a lower real gold price. This occurs despite a massive, although transitory, adverse shock to demand stemming from the Asian currency crisis. If this is so, these demand and deficit projections may no longer seem so incredible. ♦

The image shows a full-page view of a marbled paper background. The marbling consists of intricate, organic patterns in shades of brown, tan, and cream, creating a complex, swirling texture. Centered on this background is the text "PART III" in a white, classic serif typeface. The letters are well-spaced and have a slight shadow or drop effect, making them stand out clearly against the busy, textured background.

PART III



CHAPTER 9

PAST PATTERNS AND FUTURE PROSPECTS FOR OFFICIAL GOLD SALES

***B**ased on many official statements made in recent years, the following chapter reviews the behavior and attitudes of the major central banks regarding gold as a reserve currency asset.*

There is no doubt that a new generation of central bankers who believe that gold is “barren” are responsible for increased gold sales. However, there are ample reasons for expecting a limit on future official sales of gold.

HISTORICAL BACKGROUND

From 1932 to 1968, the official sector bought a persistent annual surplus of gold mine output over private consumption. In 1967-1968, once private demands caught up with mine supply and there was no longer such a surplus, private speculators saw a one way bet: The official sector was committed to supporting gold at \$35 an ounce but was not committed to selling enough gold to hold it at that level.

This led to the famous run on the London gold pool whereby private speculators bought 2,000 tonnes of gold from central banks before the central banks stopped selling and let the gold price trade freely. After a fairly small rise in the gold price, speculators tired of the game and began to sell. In the 1969-1972 period, the official sector resumed its purchases at \$35 an ounce.

Official Sector Net Gold Purchases/Sales 1950-1971 (Tonnes)			
Year	Purchases	Year	Purchases
1951	235	1962	329
1952	205	1963	729
1953	404	1964	631
1954	595	1965	196
1955	591	1966	(40)
1956	435	1967	(1,404)
1957	614	1968	(620)
1958	605	1969	90
1959	671	1970	236
1960	262	1971	(96)
1961	538	1972	151

In the period 1972-1989, the gold price rose far from its 1971 level, driven by a combination of investor buying and positive supply/demand fundamentals. During this period there was official selling of gold, but on average it was not massive. There were very large sales by the U.S. Treasury and the International Monetary Fund (IMF) in the 1975-1979 period, but over the entire 1972-1989 time period there were some offsetting official purchases as well. These were larger than is widely realized, since the Arab states bought important quantities of gold in this period that were never disclosed and that show up in the historical data as Western investment, if they show up at all.

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Despite the abandonment of the gold standard in 1972 and the supposed official demonetization of gold in favor of the SDR (Special Drawing Rights of the IMF) and the U.S. dollar later in the 1970s, the decades of the 1970s and 1980s were not periods of serious net official reserve liquidation.

Drawing Rights of the IMF) and the U.S. dollar later in the 1970s , the decades of the 1970s and 1980s were not a period of overall large net official reserve liquidation.

Official Sector Net Purchases/Sales 1971-1990			
Year	Purchases	Year	Purchases
1971	(96)	1981	276
1972	151	1982	85
1973	(6)	1983	(142)
1974	(20)	1984	(85)
1975	(9)	1985	132
1976	(58)	1986	145
1977	(269)	1987	72
1978	(362)	1988	285
1979	(544)	1989	(217)
1980	230	1990	66

The 1990s, by contrast, have been a period of significant official gold selling and lending. In the 1989-1991 period, official sales by Russia and Arab potentates were an important factor. These were to some degree distress sales engaged in to meet balance of payments and budget deficits. [Many of these sales have never been disclosed and have not been fully reflected in the official Gold Fields Mineral Service, Ltd.(GFMS) supply/demand statistics. See Appendix One to Chapter One.] However, in 1992 the pattern changed with large sales by two major European central banks – Belgium and the Netherlands. Sales by these two central banks have persisted in the years since.

The recent pattern of sustained official sales by G-10 central banks began in the 1980s with a decision by Canada to sell its gold. Canada's reasons were straightforward: The Bank of Canada regards gold as barren; gold does not bear interest and its past price appreciation is not expected to persist. U.S. Treasuries bear interest, which add to central bank profits and thereby reduce the government's fiscal deficit.

When the Dutch and Belgian central banks sold gold in 1992 and the Belgians sold again in subsequent years, they stated that they sold reserve gold to get their ratios of gold reserves to total official reserves to levels comparable to their European neighbors. This suggested that these gold sales were a one-off event conducted to facilitate the planned European Monetary Union scheduled for the end of the decade.

Recent pattern of sustained official sales by G-10 central banks began in the 1980s with a decision by Canada to sell its gold. Canada's reasons were straightforward: The Bank of Canada regards gold as barren, gold does not bear interest and its past price appreciation is not expected to persist.

When the Netherlands sold gold in 1996, it made it clear on the announcement of their sale that their motivations were basically the same as those of Canada: The sale of gold would generate funds for investment in government debt that would provide a return.

However, when the Netherlands sold gold in 1996, it had already achieved this objective, and this sale gave it a lower than average gold reserve position among European nations. It also did not appear that this sale was done to meet the Maastricht criteria for inclusion into European Monetary Union (EMU); unlike Germany, France, and Italy, the Netherlands had already reduced its budget deficit below the EMU target and the sale of gold had only a marginal impact on its debt level, which was still hopelessly above the EMU target. The Dutch made it clear on the announcement of their sale that their motivations were basically the same as those of Canada: The sale of gold would generate funds for investment in government debt that would provide a return.

AMSTERDAM, Jan. 13 (Reuters) – *The Dutch government said on Monday the sale of 300 tonnes of gold from central bank reserves would boost government revenues by 250 million guilders a year. ...This money will remain part of the central bank's reserves but will now be held in interest-bearing assets. ...Finance Minister Gerrit Zalm said that at current exchange rates and interest rates the operation was expected to lead to an extra transfer of central bank profits to the government of some 250 million guilders per year.*

THE PLANNED SWISS SALE...AND THE ABANDONMENT OF GOLD AS A RESERVE ASSET

Early in 1997, the Swiss National Bank proposed a change in the Swiss constitution to allow for a sale of gold. The markets saw great symbolism in this move. For the Swiss to sell gold meant that a new generation of central bankers had swept the central banking world, including even the gold-revering Swiss.

Early in 1997, the Swiss National Bank proposed a change in the Swiss constitution to allow for a sale of gold to finance a fund for payments to Holocaust victims. The Swiss are unique in having a gold backing for their currency that is written into their constitution, requiring a constitutional referendum to change the existing gold reserve requirement.

Many arguments have been presented by the Swiss authorities for this move: The gold reserve backing of the Swiss franc was based on too high a ratio of gold to the monetary base; the Swiss hold too much reserve gold on a per capita basis relative to other countries; a sale of roughly 400 tonnes of gold over a 10-year period, mostly in the first decade of the next century, would have only a minimal impact on the gold market, etc.

The markets, however, saw great symbolism in this move: For the Swiss to change their constitution to sell reserve gold meant that a new generation of central bankers that sees gold as a barren relic from a prior era had swept the central banking world, including even the gold-

revering Swiss. After such a move by the Swiss, it seemed inevitable to many that all of today's modern central bankers would move gradually to sell their reserve gold for the "paper" debts of governments that would yield them a return.

SUPPORT FOR GOLD AS A RESERVE ASSET

Just as this pessimism over endless official gold sales deepened in early 1997, several new events surfaced which may eventually stem the tide of official sales: There has been huge public and political opposition to a proposal by the German government to revalue its gold reserves; France has voiced support for gold as a reserve asset; and there is opposition in Switzerland to the proposal to sell Swiss gold.

The German government has taken a striking pro-gold stance over the last year-and-a-half. Despite unusually intense pressure by the U.S. and the United Kingdom to sell IMF gold to finance a fund for payments to the poorest countries, the Germans have refused to acquiesce to this plan. They have argued that the IMF's gold is its reserve of last resort and that gold sales by the IMF would send the wrong message to the world about the organization's stature, and the wrong message to the world's central banks about gold's role as a reserve asset. This position on IMF gold was elaborated on in a comment included in the Bundesbank's annual report for 1996.

There was considerable skepticism at the time of this dispute over the IMF's gold reserves about the depth of this pro-gold stance on the part of the Germans. This past year the German government proposed a revaluation of Bundesbank gold assets which had been carried at a fraction of the current market price. This revaluation was proposed in order to reduce the net debt of the German government closer to the Maastricht criteria for inclusion in EMU. To the great surprise of Chancellor Kohl and Finance Minister Waigel, this seemingly perfunctory accounting procedure generated a huge storm of protest from virtually every quarter: The opposition Socialist party; members of Kohl's own party; the world press; the prestigious German Economic Institutes; the German public and the Bundesbank itself.

To some degree, this storm of protest reflected a certain horror on the part of the Germans that their government was resorting to accounting trickery to meet the EMU targets – a practice the Germans had been criticizing their less disciplined European neigh-

Despite this trend, there are some recent signs of support for gold as a reserve asset.

The German government has taken a pro-gold stance over the last year-and-a-half.

The storm of protest in Germany in 1997 over an effort by the government to revalue its central bank gold reserves showed that pro-gold sentiments run deep in German society, and that there are considerable political costs to any initiative to sell official reserve gold.

bors of indulging in.

But there can be no doubt that the idea of any “meddling” with the central bank’s gold reserves was a force behind this storm of protest as well. Kohl and Waigel immediately realized this and gave strong assurances that the sale of Bundesbank gold was not at issue and that Germany would “never sell an ounce of gold.” They insisted repeatedly that they were only revaluing the Bundesbank’s gold – something that eventually would need to be done according to European Union rules prior to the formation of a European central bank.

But so strong was the political opposition to any meddling with the Bundesbank gold, they were forced to a compromise that favored their critics and the Bundesbank. It is now abundantly clear that pro-gold sentiments run deep in German society and that there are considerable political costs to any initiative to sell official reserve gold.

A similar pro-gold stance has been taken by French officials. There is a tradition in France dating back to the 1960s and 1970s of insisting on gold as an alternative reserve.

A similar pro-gold stance has been taken by French officials. At the annual central banking conference in London in late 1996 and late 1997, French officials voiced support for gold as an essential reserve asset. A similar point of view was expressed by a Bank of France official at the Financial Times World Gold Conference in mid-1997. Perhaps of most significance was a statement made by Jean Claude Trichet, head of the Banque de France, that gold reserves are “an important element of confidence” for the French people. It is hard to assess the significance of these French statements, but there is a tradition in France dating back to the 1960s and 1970s of insisting on the role of gold as an alternative reserve asset to the U.S. dollar.¹

There is some grass roots political opposition to the sale of official reserve gold in Switzerland. According to recent polls, public opinion

¹ We get a glimpse of the possible historical roots to a positive sentiment toward gold among the French in a book by Paul Volcker and Toyoo Gyohten, “Changing Fortunes.” Although we don’t know whether the new generation of politicians and government officials in France share today any of these attitudes of their counterparts a generation ago, the experiences of the authors are instructive.

Paul Volcker, recollecting the G-5 discussions in the mid 1960s over the introduction of a new reserve asset, the SDR, writes: “Some Europeans, and particularly the French, were deeply suspicious of any alternatives to gold. They wondered whether the Americans weren’t looking for a different but still painless way to finance their balance of payments deficits.” (p. 44.) Again, remembering G-5 discussions during the breakdown of the Bretton Woods System in the early 1970s, Volcker writes: “Most of the discussion that night was about our proviso that gold would be sold into the market if necessary to dampen speculation. It became clear that the French were extremely reluctant to sell gold even as a limited participant in a joint effort; the proposal plainly touched a political nerve in a country historically populated with gold hoarders.” (p. 110.)

Toyoo Gyohten remembers during the same period: “Another cause of the collapse of Bretton Woods was the uncontrolled increase of the amount of dollars in the hands of foreigners. Europeans, particularly the French, argued against the privilege of the United States in financing its foreign deficits with its own currency, and we joined them in insisting that the United States accept the obligation of settling its accounts with other assets – either gold, SDRs or foreign currencies – just like any other country.” (p. 133.)

may have turned against the proposal. The most esteemed former head of the Swiss National Bank has denounced the plan, and the leading opposition party led by Mr. Christof Blocher is committed to its defeat. In the past, Blocher has campaigned against referendums and has won. These political developments make the sale of the Swiss gold less certain.

THE NEW GENERATION OF CENTRAL BANKERS AND GOLD

One hears frequently that a new generation of central bankers who do not have their predecessor's affinities for gold as a reserve asset are taking over the central banks and that this is responsible for rising official sales.

Argentina announced the sale of virtually all their gold in 1996-1997, and we understand that there are quite a few similar sales which have not yet been disclosed. The senior management of the Portuguese central bank appears interested in gold sales. A study for future gold sales was initiated, but public opposition may have caused the bank to drop this initiative for the time being.

Public opposition, however, does not always deter official gold sales. In Australia, the central bank summarily sold two-thirds of its entire gold reserve, even though it is a major gold-producing country. As might have been expected, the sale drew a storm of protest from the mining industry and the government of Western Australia. It is interesting that the government officials in Australia seem undeterred, with Finance Minister Peter Costello holding open the prospect of further sales in the future.

In many of the world's central banks and finance ministries there are younger generation technocrats who regard gold as a barren barbarous relic from another era, and who have been lobbying for its sale. Often, the older central bankers and most of the elected politicians have been inclined to turn a deaf ear to the wishes of these technocrats. The political costs to the German and possibly the Swiss incumbent governments arising from meddling with official gold may make Europe's politicians more inclined to turn a deaf ear to these proposals for gold sales.

There has been huge pressure on the gold price throughout 1997, especially in the second half of the year. GFMS has expressed the belief that there was a 200-tonne undisclosed gold sale in the first half of 1997, probably of European origin. Undisclosed official sales have

Also, recent political developments make the sale of the Swiss gold less certain.

In many of the world's central banks and finance ministries there are younger generation technocrats who regard gold as a barren, barbarous relic and who have been lobbying for its sale. Often, the older central bankers and most of the elected politicians have been inclined to turn a deaf ear to the wishes of these technocrats.

probably been far larger, particularly in the second half of the year. The size of such sales implied by the vast deficit in the gold market this year points to European central bank selling, since only these central banks have such large quantities of gold and a motivation to sell.

In countries like Belgium and the Netherlands, official gold sales generated no political opposition, so in these countries these younger central bankers and finance ministry officials may be pushing for further gold sales and may be getting their way. Though nothing has been disclosed at the time of this writing, it is quite possible that these countries have continued to sell their official gold, despite indications from the French and Germans that these countries have agreed to cease their sales in the recent depressed gold price environment.² By contrast, in France and Germany the ruling politicians are likely to refuse to change the status quo; the comparatively meager interest earnings derived from gold sales may not seem worth risking political embarrassment such as Kohl and Waigel have suffered. Statements by Bank of France officials support this contention.

ENTRENCHED ANTI-GOLD SENTIMENT AMONG THE ANGLO-SAXONS

Whereas there is an apparent positive sentiment toward gold as a reserve asset among the people of continental Europe, including some politicians and government officials, the Anglo-Saxons appear to be quite openly anti-gold.

The U.S. has pushed hard since the early 1970s for a reduction in the role of gold in the world monetary system. Under U.S. leadership, an agreement was reached in 1978 that the G-7 central banks as a group would not increase their holdings of gold. It has been reported that undersecretaries of the U.S. Treasury have lobbied Asian central banks to not diversify their vast official reserves into gold. This year, Dale Henderson, Associate Director of the Division of International Finance at the U.S. Fed, wrote a staff paper on gold as a reserve asset that argued that the central banks should sell all their gold. Though the paper was issued with a disclaimer that it was only a staff paper and did not reflect

² On June 16, 1997, a Reuters report included comments by Jean Pierre Patat, General Manager of the Foreign Department at the Banque de France: "Concern that European central banks will sell large portions of their gold reserves are 'devoid of all substance.' Investors needn't be concerned because those countries will have to transfer gold reserves to the planned European Central Bank, 'leaving little room for gold sales,' Patat said at the June Financial Times Gold Conference. Several central banks which had sold gold from their reserves now feel there is no longer an advantage to selling more bullion. Patat...told delegates the reasoning now was that any advantage (to selling gold) was outweighed by the loss on remaining reserves from reducing the gold price. He noted that only a net 239 tonnes of gold was sold by the official sector in 1996, which was close to the average sale of the past several years. Yet the gold price fell and the market was depressed. 'It seems the market is more influenced by psychological phenomenon than central bank gold sales,' Patat said.

In countries like Belgium and the Netherlands, official gold sales generated no political opposition, so the younger central bankers and finance ministry officials in these countries may be pushing for further gold sales.

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the official position of the U.S. Treasury or central bank, Mr. Henderson represented the U.S. at the 1997 central banking conference in London where he stated that “anything which tends to perpetuate gold’s role in the monetary system is probably a mistake.”

The British representatives at such conferences have tended to make statements that are supportive of gold’s role as a central bank reserve asset, but the underlying sentiment of the Bank of England on the issue may be closer to that of the U.S. In late 1997, with the gold market close to a state of “psychological catastrophe” amidst rumors of unbridled, EMU-related official gold sales, Bank of England governor Eddy George threw fuel on the fire by remarking that, “...whereas gold used to be seen as (a good asset) it’s now seen as the bottom of the pile.”

And, of course, Canada and Australia have been aggressive sellers of gold from their central bank reserves.

ARE THE FAR EASTERN CENTRAL BANKS ACCUMULATING GOLD?

There are some indications that China has begun to accumulate reserve gold. In its 1996 annual report on gold, GFMS claims that China was an important buyer of gold in 1996. It is well known that China’s central bank is an active range trader in the gold market, and we suspect that it purchases gold for distribution to the domestic jewelry fabrication industry. Therefore, it is not clear that Chinese purchases in 1996 were for reserve accumulation.

The central bank of China has publicly stated that it will not follow the European central banks and sell gold, indicating something of a pro-gold attitude. But it has not disclosed any recent gold purchases. However, rumors have been surfacing from several well-placed sources (see footnote on page 46 of Chapter Three) that China has been accumulating gold reserves. As the central bank of China is making no comment on alleged gold purchases, it is possible that they have much more to do. There is speculation, but no hard information, about China’s motives – diversification of their reserves, part of a program of full domestic currency convertibility, or strategic considerations associated with their remarkable military buildup.

There are hints of other moves toward diversification of official reserves from U.S. Treasuries into gold outside the Western bloc. Russia has publicly stated an intention to build its gold reserves.

In late 1997, Bank of England governor Eddy George disparaged gold as a reserve asset.

By contrast, the central bank of China has publicly stated that it will not follow the European central banks and sell gold. Rumors have been surfacing that China has been accumulating gold reserves.

Russia has publicly stated an intention to build its gold reserves. There are rumors of undisclosed gold accumulation by several other emerging Asian nations.

It appears that there is political and public support for gold as a reserve asset in some countries in Europe and possible motivations for gold purchases in the emerging Far East.

There are rumors of undisclosed gold accumulation by several other emerging Asian nations besides China. And, in a surprising public statement made by Japanese Prime Minister Hashimoto in 1997, there is a hint of a long-standing interest in Japan in adding to its gold reserves.

However, at the present time we have only hints and rumors of a move toward gold accumulation by these Eastern countries, which hold so much of the world's international reserves. Recent interest in Asia in developing a regional Asian currency bloc that may be somewhat more independent of U.S. and Western influence may someday have a positive bearing on Asian attitudes toward gold as a reserve currency asset. (See the appendix to Chapter Seven, "A Long Term Perspective on Asia.")

Though the press has increasingly reflected a view that the world's central banks are going to sell all their gold, on balance it appears that there is political and public support for gold as a reserve asset in some countries in Europe, and possible motivations for gold purchases in the emerging Far East where so much of the world's official global foreign exchange reserves have been accumulated. Despite a very high level of gross official gold sales in 1997, it now seems far from clear that gold is regarded as a relic of the past by all central banks and that a torrent of gold will flow from the official sector until its great hoard of gold is depleted.

THE OUTLOOK FOR EUROPEAN CENTRAL BANK SALES

The bullion dealers have encouraged a belief that, in the run up to EMU, the central banks of Europe would sell gold to meet the Maastricht criteria. We have always doubted this because, for virtually all the European countries, gold sales can have only a marginal impact on the Maastricht criteria.

Profits from central bank gold sales could be used to reduce current budget deficits to a significant degree in any one-year; however, since such a deficit reduction would be a one-off non-recurring fiscal improvement, the European Union (EU) has ruled that proceeds from gold sales cannot be used to reduce fiscal deficits to meet the Maastricht target. We have also thought that gold sales to meet the debt criteria made little sense. The EU allows gold sales for this reason, but, as the Germans have now made clear, only a revaluation of official gold – not a sale – is needed to address the debt criteria.

The only legitimate reason for selling gold to meet the Maastricht criteria is that gold earns no interest, whereas U.S. Treasuries do and, under current accounting rules, such interest income reduces the government budget deficit whereas gold's long-term appreciation in nominal terms does not.

However, for all of the larger European countries, the interest income that might be generated by gold sales is so small that it can only have a negligible impact on reducing government budget deficits. For example, Italy has 2,500 tonnes of gold. If it sold all of its gold and invested the proceeds in Treasury bills, it would earn approximately \$1.7 billion in interest income. This is little more than 0.1% of Italian Gross Domestic Product (GDP). It hardly seems worth so extreme a move to reduce the government's fiscal deficit by so small an amount. A sale of several hundred tonnes of gold would be less disruptive, but then the improvement in the fiscal deficit would be almost negligible.

The Dutch central bank has been selling gold not to meet the Maastricht criteria, but because it regards gold as barren and it prefers interest-bearing Treasuries. The same is probably true of the Belgian central bank as well.

Recognizing this motivation on the part of these selling central banks, it is possible that the EMU timetable has in fact encouraged Dutch and Belgian gold sales, but in a very different way than is commonly thought. Once the European central bank (ECB) is created – part, but only part – of the reserves of each European central bank will be transferred to the ECB. However, the ECB will control the management of *all* the reserves of the system, including those still held by the individual national central banks. It is possible that one or more European central banks are trying to sell as much gold as possible for interest bearing assets before they lose autonomy over their reserve management with the formation of the ECB.

The Germans and French will no doubt dominate the ECB, particularly in its early years when the Euro will be regarded with some skepticism. The Germans have been uncompromising in their pro-gold stance. They are also concerned that a broad EMU, which now appears likely, will lead to very considerable skepticism about the new European currency. Whether or not the Germans believe that gold reserves in fact enhance the credibility of a currency, the storm of protest over revaluation of German gold reserves must make them sensitive to the fact that some, if not many, Europeans will regard a

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The Germans and French will no doubt dominate the ECB over the longer term. EMU would probably be a positive for gold in that it might extend Germany's and France's pro-gold positions to all of Europe.

The decisions about which countries will be included in EMU has been advanced to May of 1998.

stable gold reserve as a symbol of a strong currency. The French appear to have adopted a similar stance.

It is likely that the Germans and French, who will dominate EMU, will oppose gold sales by a newly formed ECB, much as the Germans have opposed IMF gold sales. *In this sense, over the longer term, EMU would probably be a positive for gold in that it might extend Germany's and France's pro-gold positions to all of Europe.* We are not alone in holding these views. Similar views are held by David Hale of Zurich Kemper, one of the best informed global business economists in the world today.³

The deep depression in the gold price in 1997 and the large consequent increases in gold demand and the market deficit are no doubt due in part to official sales. They should therefore be a barometer of the intensity of these sales. If this is so, recent extreme gold price weakness, extending as it has into 1997's fourth quarter of strong seasonal jewelry demand, suggests that this official selling may have been accelerated in recent months against some timetable. According to the most recent EU statements, the decisions about which countries will be included in EMU has been advanced to May of 1998. The exchange rates for inclusion will be decided upon then as well. The ECB will formally begin to operate later, but reserve positions may have to be frozen before that date in preparation for the start of ECB operations. This advance in the EMU timetable may have encouraged gold sales in late 1997.

The decisions regarding entry, to be made in May of 1998, will have to be based primarily upon the fiscal and debt ratios for 1997. From the point of view of improvements in the fiscal deficit criterion, accelerating gold sales in late 1997 makes little sense: Fourth quarter gold sales will have very little impact on the overall 1997 fiscal deficit. If meeting the deficit criterion is in fact motivating recent gold sales, these sales should end by year-end 1997. However, this motivation does not seem very plausible to us.

It seems more plausible that the Dutch and perhaps other European central banks have been selling gold to replace it with interest-bearing assets before the creation of the ECB. If this has been the motivation behind recent gold sales, the move forward in the EMU timetable may be accelerating such planned gold sales. If, for example, the Dutch have decided to eliminate most of their gold holdings before French and German influence bars them from doing so, they may be trying to complete the sale of most of their gold before May of 1998.

³ David Hale, *Global Economic Observer*, Vol. 8, 7/24/97 Zurich Kemper Research, "...the Euro is so rapidly acquiring a reputation as a potentially soft currency that it is doubtful the Germans and French will want to reinforce the pessimism about its value by selling gold during the next few years."

The conclusion from the above is obvious. The move forward in the EMU timetable may be compressing planned gold sales into a shorter time frame. Once the decisions are made to fix the European exchange rates forever, which should occur by early May of 1998, the EU government may want to avoid any major changes in official reserves and recent unprecedented large official sales may abate significantly.

THE LONGER TERM: WILL A SOFT EURO ENCOURAGE OFFICIAL PURCHASES OF GOLD?

There is a common theme among gold bulls that there will be an ECB, but that the resulting central bank and its currency – the Euro – will be weak. These gold bulls argue that a weak Euro will encourage other central banks to buy gold.

We are very skeptical of this argument. Currently, central banks have not bought gold for two reasons: First, they tend to regard gold as devoid of any yield; and second, some, particularly in Asia, have been under pressure from the U.S. to purchase U.S. Treasuries rather than gold.

It seems to us that whether there is a weak Euro or not will not materially affect either of these issues. Like the Canadians before them, the Australians have recently sold gold because it yields no interest and they do not expect the capital gains in gold over the past to be repeated. Central banks with such motivations may continue to sell gold for interest bearing currencies; a weak Euro will only change the composition of their currency portfolio, but not their preference for currencies vs. gold. Again, whether there is a weak Euro or not, Asian central banks will buy gold only if they have an incentive to go against the desires of the U.S.

Although this is our basic view of this matter, it should be noted that some recent statements by Asian central banks suggest otherwise. China has made a public statement that it will not initially buy Euros. We believe that, to an increasing degree, China is leading the way for the emerging Asian countries. Recent decisions by China's ruling body point to increased involvement in the economic affairs of its Far Eastern neighbors.

Skepticism regarding the Euro does not necessarily imply gold purchases. However, the recent currency turmoil in the Far East has generated anti-U.S. sentiments and a growing desire for a regional currency bloc in Asia. With negative sentiment toward the U.S., skepticism regarding the Euro, and less than 1% yen deposit rates, a weak Euro may lead to a propensity toward gold purchases by a coalescing Asian currency bloc once the current "run" on the Asian central banks is over. (See the appendix to Chapter Seven, "A Long Run Perspective on Asia.") ♦

Once this occurs, the unprecedented large official sales of 1997 may abate significantly.

China has made a public statement that its central bank will not initially buy Euros. China is leading the way for the emerging Asian countries.

Skepticism regarding the Euro does not necessarily imply gold purchases. However, the recent currency turmoil in the Far East has generated anti-U.S. sentiments and a growing desire for a regional currency bloc in Asia. Gold purchases by a coalescing Asian currency bloc may eventually materialize.



CHAPTER 10

THE POSITIVE REAL RETURN TO GOLD

***T**his chapter has little in the way of tedious statistics, and makes two extremely important points:*

First, over the long run, the real return to holding gold is higher than government bills.

Second, not only do gold loans have a high real cost but, unlike currency-denominated loans, large volumes of gold loans cannot be readily repaid.

Most readers will find that this chapter is worth reading.

A DISTINCTION WITHOUT A DIFFERENCE

Gold is a monetary asset. It is an asset that is no one's liability. It is real and immutable, immune to the debasement of the paper issue of sovereigns. These are the properties its supporters extol.

For today's new generation of business-school-trained central bankers, gold is a relic of a bygone era. It is barren, as it yields no current return in the form of payments of interest. In the current era of ascendancy of financial assets, both private and official portfolios perceive gold as an asset devoid of any real return. So, for most parties with any interest in the debate for and against gold as a monetary asset, the issue is whether gold is desirable as a monetary reserve asset because it cannot be debased or defaulted on, even if it yields no return.

It is our contention that this constitutes a distinction without a difference, a false set of alternatives between gold and the paper issue of sovereigns. Over the last two centuries, on average gold has always provided a positive real yield; including the flow and ebb of monetary demands, the interplay of fabrication demands and mine supply generates a real return which equals that of the reserve currency issue of governments. And at no time in history has this trend real return to gold been greater than in recent decades.

GOLD'S POSITIVE REAL RETURN: THE HISTORICAL RECORD AND ITS MICROECONOMIC FOUNDATIONS

Between 1971 and 1996, the real price of gold in U.S. dollars increased three-fold. This constitutes a real return in excess of 5% per annum. Short dated U.S. Treasury debt has never provided such a high yield over so extensive a period of time.

"Aha!" it is said, "This is only because the price of gold was artificially depressed by central bank intervention after decades of a fixed gold price at \$35 an ounce."

In fact, this widely held view is demonstrably incorrect. The official sector held the gold price down for a brief period in 1967-1968 during the attack on the London Gold Pool. However, once the Pool let the gold price trade freely, it rose briefly and then fell again to the \$35 level, at which point the official sector was committed to purchase it once again. In the period 1969-1972, the gold price was supported, not capped, by central bank intervention.

For most parties, the issue is whether gold is desirable as a monetary reserve asset because it cannot be debased or defaulted on, even if it yields no return. This constitutes a false set of alternatives between gold and the paper issue of sovereigns. Gold has always provided a positive real yield, and one which may equal or exceed that of the reserve currency issue of governments.

Between 1971 and 1996, the real price of gold in U.S. dollars increased three-fold. This constitutes a real return in excess of 5% per annum.

**Official Sector Gold Sales/Purchases
1964-1988**

YEAR	Net Official Sales (Purchases)	Commentary
1964	(631)	The official sector completes its purchase of the excess of gold supply over demand.
1965	(196)	"
1966	40	Speculators take on the London Gold Pool.
1967	1,404	"
1968	620	"
1969	(90)	As speculators tire and begin to sell, the official sector once again becomes a net buyer of gold.
1970	(236)	"
1971	96	"
1972	(151)	"
1973	6	
1974	20	
1975	9	
1976	58	The U.S. Treasury and the IMF sell gold at auction.
1977	269	"
1978	362	"
1979	544	"
1980	(230)	Central banks buy gold on the pullback from gold's price peak.
1981	(276)	"
1982	(85)	"
1983	142	Through the remainder of the 1980s , the official sector remains on balance a buyer of gold.
1984	85	"
1985	(132)	"
1986	(145)	"
1987	(72)	"
1988	(285)	"

Before gold's explosive rise in price in the 1970s, the price of gold at \$35 was at or above its free market price. The three-fold rise in the real price of gold since then constitutes a rise in a free market price. However, as we have established earlier in this study, the price of gold is now deeply depressed by a flow of official gold. As we showed in Chapter Five, if these official flows abated, the gold price would trade in the \$600 range. If the official sector was now purchasing gold as it was in the period 1969-1972, the real price of gold would have risen by more than 17-fold in nominal terms and more than four-fold in real terms.

Over a 24-year period, such a four-fold increase in the real gold price implies a 6% plus compound annual real rate of appreciation. One cannot attribute this impressive tendency for the gold price to rise to Western investment demands. Everyone now believes that inflation in the industrialized world is non-existent. Twenty-four years of Gold Fields Mineral Services data suggest that Western households have now sold most of the bullion they might have acquired in the 1970s

In the period 1969-1972 the gold price was supported, not capped, by central bank intervention. The price of gold at \$35 was at or above its free market price. The three-fold rise in the real price of gold since then constitutes a rise in a free market price. If the official sector was now purchasing gold as it was in the period 1969-1972, the real price of gold would have risen by more than 17-fold in nominal terms and more than four-fold in real terms.

Over a 24-year period, such a four-fold increase in the real gold price implies a 6% plus compound annual real rate of appreciation.

The microeconomic basis for the gold price to rise in real terms lies in the perennial positive difference between the trend growth rates of fabrication demand and mine supply given a constant real price of gold. The real gold price rises to reduce price elastic demand down to the level of price inelastic supply.

and early 1980s. Today gold speculators are predominantly on the short side, and there is, if anything, a small ongoing residual liquidation of physical bullion. Official coin sales in the West, though still positive, are now a minor factor, contributing to less than 2% of global demand. Had both official flows and Western investment been neutral factors in the gold market over this 24-year period, the pure commodity dynamics of gold would have resulted in a very high annual rate of real price appreciation.

The microeconomic basis for this strong tendency for the gold price to rise in real terms lies in the perennial difference between the trend growth rate of fabrication demand (net of official coin and scrap), on the one hand, and the trend growth rate of mine supply, on the other, given a constant real price of gold.

In recent years, the disparity in these two growth rates has been met by a growing flow of official sector gold. But absent such flows, the gold price must rise to equilibrate the disparity between these ex-ante growth rates of supply and demand. Because mine supply is quite inelastic with respect to the gold price, the burden of adjustment falls on demand: The gold price rises to reduce price elastic demand down to the level of price inelastic supply.

Given this price rationing mechanism, we can calculate the real rate of price appreciation of gold that gold's commodity dynamics alone should generate over any long time period.

We showed in Chapter Six that, if the real gold price had been constant, the trend rate of growth of fabrication demand (net of official coin and scrap) would have been 5% or more per annum over the period 1971-1996. During that same period, mine supply increased only 1.8%. (This happened despite a massive real increase in the gold price; had the real gold price been constant, mine supply would have grown somewhat more slowly, but we do not need to factor this in to make our basic point.) During the first 15 years of this two-and-a-half-decade period, before the onslaught of large flows of gold from official hoards, large real price increases rationed ex-ante rapidly growing demand to more slowly growing mine supply, thereby clearing the market.

As discussed earlier, we know roughly the elasticity of gold fabrication demand with respect to price. Using this estimate of gold's price elasticity, we can calculate how much the gold price must rise in real terms to clear the market in this way: It must rise each year on aver-

age by an amount that is equal to roughly 1.5 times the difference in percentage points between the trend growth rates of fabrication demand and mine supply under constant real price conditions.

These two trend growth rates were 5%-6% and 1.8% respectively for this 1971-1996 period. This differential of 3.2-4.2 percentage points would have required almost a 6% annual rate of increase in the real gold price to ration demand down to supply. This microeconomic analysis explains why the real dollar gold price in fact rose at a 5% rate from 1971-1996 despite official flows that have depressed the gold price in recent years. It also explains why, had these official flows not depressed the gold price recently, this real price would have risen at roughly a 6% rate over this five-year interval.

What does this analysis imply for the gold price going forward? In Chapter Six we argued it is reasonable to expect global gold demand (ex-Western investment) to grow at a 5% real rate if the real gold price remains constant. We expect mine supply to grow at a 3% rate under the same conditions.¹ This would result in an annual differential between these growth rates of 2 percentage points.

We showed in Chapter Seven that, if the real gold price were held constant (implying a \$457 nominal price in the year 2001 after 3% per annum U.S. inflation), annual official gold flows would have to rise from 1,100 tonnes in 1996 to more than 1,700 tonnes in 2003 to fill the growing gap between demand and supply. What, might we ask, would happen if official gold flows did not expand but instead remained constant? Based on our estimated price elasticity of gold demand, the gold price would have to rise in real terms by 3% per annum over this coming five-year period. In other words, if all other factors remained equal, the commodity dynamics of the gold market would result in a 3% real rate of return to holding gold.

We must ask whether the real gold price has always exhibited such a high real rate of appreciation. The answer must surely be no. An accumulated 3% real rate of appreciation is huge when compounded over the millennia which gold transcends.

Over the period 1971-1996, the trend rate of growth of global gold demand when the real price of gold was constant was 5%-6% per annum. The same trend rate of growth of mine supply was 1.8%. Given our estimated price elasticity of gold demand, the real gold price had to rise by almost 6% per annum to equilibrate demand and supply. And, in fact, the real gold price rose at roughly this rate over this two-and-a-half decade period.

Going forward, we expect gold demand to grow at a 5% rate and mine supply to grow at a 3% rate if the real gold price is constant. Again, employing our estimated price elasticities of gold demand and supply, the real price of gold will have to rise at a 3% rate to equilibrate demand and supply.

¹ As we discussed in Chapter 5, a 3% annual rate of growth of mine supply is slightly higher than the very long run average. In recent decades, mine supply growth has averaged only 1.8% despite major new discoveries, technological progress, and a huge rise in the real gold price. Also, the severe 1997 bear market in gold and gold equities is going to place most gold projects on hold. It is going to prevent the financing of the majority of them and curtail the exploration expenditures needed to find new ones. It will encourage high grading which will accelerate mine depletions. Even with a fairly quick recovery in the gold price to the levels of 1994-1996, gold mine supply will be slowed below trend by the shocks of 1997. However, we are interested in the trend values of the variables that govern gold's real long run rate of return. Prior to the shock of 1997, it appeared to us that exploration trends suggested an outlook for mine supply growth that was close to the historical average. Therefore we are employing that assumption in this chapter.

The tendency for the gold price to rise sharply in real terms in recent decades lies in the exceptionally high real growth rates of the emerging Asian economies with their strong cultural affinity for gold.

In our opinion, the tendency for the gold price to rise sharply in real terms in recent decades lies in the exceptionally high real growth rates of the emerging Asian economies with their strong cultural affinity for gold. These economies have grown at 5%-10% real rates in recent decades, as special conditions have allowed them to progress very rapidly toward the technological frontier created by two centuries of technological progress in the now industrialized West. Until recently, these economies resembled the Western economies prior to the onset of the industrial revolution; now global integration, high savings rates, technology transfer, and rapid deepening of human capital are allowing them to traverse two centuries of progress in a matter of decades. As these economies approach this technological frontier, their economic growth rates will slow.

Two decades ago, when these economies were growing yet faster than they are now, they were a much smaller share of the world economy. Being so relatively small, their high growth rates of demand did not contribute greatly to overall global gold demand. Now, even though these growth rates in the aggregate have slowed somewhat, these economies are a much larger share of global Gross Domestic Product (GDP). As a consequence, a somewhat lower rate of growth of Far East Asian demand now has an equal or larger impact on overall global gold demand growth than it did a decade or two ago.

This positive impact on global gold demand will probably persist for at least another decade or two as economic growth in these countries continues to outpace the growth of the industrialized countries. Their growth rates overall will decay somewhat, but their share of global income will rise; overall, there will be a mix shift toward these economies with especially higher intensities of gold use that will keep global gold demand growing faster than global GDP. This will preserve a significant differential in global gold demand growth over mine supply growth, resulting in a tendency toward a very positive real return to gold.

The fact that much of gold's real return in recent decades can be attributed to the high growth rates of the Far Eastern economies does not mean that gold has not always had a tendency to appreciate in real terms. Gold jewelry has always been a luxury good in the economist's sense of the term; the ratio of expenditures on gold jewelry have always tended to rise as per capita incomes rise. Therefore, demand for gold in fabricated products has always tended to grow more rapidly than global income, requiring a rising real gold price to ration demand down to the level of more slowly growing mine supply.

However, demand for gold in fabricated products has always tended to grow more rapidly than global income, requiring a rising real gold price to ration demand down to the level of more slowly growing mine supply.

This tendency for gold's supply/demand dynamics to generate a positive real return to gold is not obvious in the historical data. Though the inflation data is somewhat unreliable, very long-term studies tend to show that there has been appreciation in the real dollar price of gold since the beginning of the 19th century, but that this rate of appreciation has been marginal. In a study of the long-term real returns to various assets, Professor Jeremy Siegel has calculated that gold's real return has been 0.3% per annum since the beginning of the 19th century.

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Why, we might ask, does this historical marginal real return to gold fail to fully reflect gold's commodity-based trend rate of real appreciation? The answer lies in a huge change in the monetary role of gold. If one goes back a century, one sees that monetary demands for gold exceeded fabrication demands.

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By contrast, after 1970, monetary demands for gold have been negative; this has been most pronounced in this decade, as monetary gold has been dishoarded and at a rapid rate. By 1995-1996, monetary gold demand was very negative. This swing in monetary demands from

By contrast, after 1970, monetary demands for gold have been negative.

Gold Demand (tonnes)			
Monetary Demands & Fabricated Demands			
Decade	Monetary	Fabricated	Total
1820	94.0	24.9	118.9
1830	101.7	43.9	145.6
1840	50.0	154.3	204.3
1850	242.50	289.8	532.3
1860	1,493.0	515.1	2,008.1
1870	904.8	995.7	1,900.5
1880	639.8	1120.0	1,759.8
1890	566.4	1,062.9	1,629.3
1900	1,978.9	1,181.6	3,160.5
1910	3,361.4	2,381.0	5,742.4
1920	3,839.5	2,579.8	6,419.3
1930	3,823.9	1,966.7	5,790.6
1940	9,589.4	640.8	10,230.2
1950	7,511.7	1,035.4	8,547.1
1960	4379.4	4955.9	9,335.3
1970	360.8	10,619.0	10,979.8
1980	-839.8	9,424.5	8,584.7
1995/96	-11,000.0	40,000.0	29,000.0

Source: Eugene J. Sherman, Gold Investment Theory & Application, p.74.

massively positive to massively negative implies that nonmonetary or "fabrication" demand for gold has expanded much more rapidly than overall gold demand and, at the same time, than overall gold supply from mine production and scrap.

If we hypothetically exclude monetary demands for gold over this very long time period, the gold price would have been much lower a century or two ago, and today it would be somewhat higher.

Under these conditions, the real gold price might have tripled. Over a period of a century, this implies more than a 1% additional per annum real return above and beyond the 0.3% real return that in fact materialized over this period.

We can see this same effect directly by comparing the growth in fabricated demand for gold to growth in mine supply over a comparably long period.

Over the last 180 years, mine supply grew at a 2.85% rate. Fabrication demand grew at a 4.18% rate. Given our estimates of the long run elasticities of fabrication demand and mine supply with respect to the real gold price, an additional 1.5% or more per annum rise in the gold price might have occurred over this extremely long period to equilibrate non-monetary demands and supplies.

If we hypothetically exclude monetary demands for gold over this very long time period, the gold price would have been much lower a century or two ago, and today it would be somewhat higher. We can go back roughly a century and ask, what would have happened to the gold price if monetary demands for gold had been zero?

We can use our estimate of gold's long run elasticity of private demand to estimate where the real gold price would have been then. In a similar vein, we can look at the current period and ask, as we did in Chapter Five, where would the gold price be today if monetary demands for gold were not negative? It appears that, under these conditions, the real gold price might have tripled. Over a period of a century, this implies more than a 1% additional per annum real return above and beyond the 0.3% real return that in fact materialized over this period.

Critics will respond that such a calculation is far too hypothetical to be meaningful. However, we can see this same effect directly by comparing the growth in fabricated demand for gold to growth in mine supply over a comparably long period. Our data on fabrication demand and mine supply goes back almost two centuries. During this very long period, the real price of gold has risen at a real rate of perhaps 0.3% per annum on average. If we smooth the data on mine supply at the beginning of this period, it seems that global gold mine supply has risen by roughly 160 times under near constant real price conditions. Fabrication demand, by contrast has risen by roughly 1,600 times, or more than 10 times mine supply.

Over this 180-year period, mine supply grew at a 2.85% rate. Fabrication demand grew at a 4.18% rate. The annual growth rate in fabrication demand exceeded mine supply by between 1.0 and 1.5 percentage points per annum. If monetary demands for gold had not swung massively from positive to negative levels, the gold market would have required a rise in the real gold price to bring demand and supply into equilibrium. Given our estimates of the long run elasticities of fabrication demand and mine supply with respect to the real gold price, an additional 1.5% or more per annum rise in the gold price might have occurred over this extremely long period to equilibrate nonmonetary demands and supplies.

Given the long time period and questionable data involved, it is not very useful to try to calculate this hypothetical real return with any greater precision. Suffice it to say that the long run historical record suggests that gold's commodity dynamics would have resulted in a

Two Centuries of Global Gold Fabrication and Mine Output		
Decade	Increment in World Mine Output (tonnes)	Increment in Absorption in Fabricated Products
1810	182.0	
1820	118.0	24.9
1830	145.0	23.9
1840	204.4	154.3
1850	532.50	289.8
1860	2,008.1	515.1
1870	1,900.5	995.7
1880	1,759.8	1,120.0
1890	1,629.3	1,062.9
1900	3,160.5	1,181.6
1910	5,742.4	2,381.0
1920	6,419.3	2,579.8
1930	5,790.7	1,966.7
1940	9,818.6	640.8
1950	8,886.2	1,035.4
1960	9,779.8	4,955.9
1970	14,006.2	10,619.0
1980	13,247.9	9,424.3
2000 *	23,500.0	40,000.0
% Gain 1820-2000	15,850% or 159 times	160,643.0% or 1,606 times

*1995 production and demand times 10. We assume that mid-decade levels will equal the annual average for the decade 1990-2000.

Source: Eugene J. Sherman, *Gold Investment Theory & Application*, p.74.

positive real rate of price appreciation of gold of almost 2% since the early 19th century. Gold's real positive return seems to be an enduring property based on the scarcity of its supply and its perennial rising intensity of use or demand.

GOLD'S POSITIVE REAL RETURN: IMPLICATIONS FOR CENTRAL BANKS AND GOLD BORROWERS

Throughout this report we have focused on gold's commodity fundamentals. We have come to some key conclusions:

- Flows of official gold are now depressing the current gold price by hundreds of dollars an ounce. In due course, these flows must cease, though it could conceivably take a long time.
- Gold exhibits a persistently strong demand trend over very long periods of time, while mine supply tends to grow slowly over comparable periods. This leads to a long run tendency for the real price of gold to rise. Gold's long run trend rate of return in a world with zero monetary flows of gold is equal to or exceeds the

The historical record suggests that gold's commodity dynamics would have resulted in a positive real rate of price appreciation of gold of almost 2% since the early 19th century.

historical real yield paid on the short dated issue of sovereigns and exceeds the real return to all other major commodities.

- Because of the current rapid economic growth in the Far East emerging economies, with their cultural affinity for gold, this trend real rate of return of gold has been especially high in the current period.

It is a great irony, then, that the new generation of central bankers of the world view gold as barren and urge its sale. It is also a great irony that miners and speculators have engaged in such massive borrowings of gold, for if gold as an asset yields a high real rate of return over the long run, as a liability it has a high real cost.

It is a great irony, then, that the new generation of central bankers of the world view gold as barren and urge its sale. It is also a great irony that miners and speculators have engaged in such massive borrowings of gold, for if gold as an asset yields a high real rate of return over the long run, as a liability it has a high real cost.

What we see in the gold market is an extraordinary misperception by all economic agents. They extrapolate forward the bear market in gold from its price peak in 1980 at \$850 to its current depressed level near \$300. This is done with no consideration to the extraordinary 24-fold rise in the gold price prior to this price peak, even though this 24-fold appreciation over eight years probably exceeded that of any major market over so short a period of time.

Central bankers, producers, and the other shorts in the gold market believe that gold as an asset has a zero nominal return and gold as a liability has a zero nominal cost because they exhibit “adaptive” or backward-looking expectations behavior regarding the future price of gold. This short run focus on the recent negative price trend has distorted the assessments of all these economic agents.

When the future price expectations of economic agents are based solely on the price trend of the prior period, we call this backward-looking expectations behavior “adaptive.” Central bankers, producers, and the other shorts in the gold market believe that gold as an asset has a zero nominal return and gold as a liability has a zero nominal cost because they exhibit adaptive, or backward-looking, expectations behavior regarding the future price of gold. This short run focus on the recent negative price trend has distorted the assessments of all these economic agents, leading them to sell gold outright and to go short, thereby further exacerbating this negative price trend which is so at variance with gold’s long run positive real price trend.

Such periods, in which the behavior of market participants is so much at odds with the underlying fundamentals and the grand sweep of a market’s historical trend, eventually come to an end. In time, today’s bearish central bankers will realize that their gold sales and gold loans are depressing the gold price substantially and masking gold’s long run positive rate of appreciation.

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When will this realization dawn, we may ask? Because trend growth in global gold demand exceeds trend growth in mine supply at a con-

stant real price, central bank gold flows must increase simply to keep the real gold price constant.

Given the recent very high rate of such flows, this seems unlikely. Once these flows of official gold stabilize or abate, supply/demand forces will generate a constant to rising real gold price over a sustained time period. Then, in response, market participants with adaptive expectations behavior will revise upward their expected returns to holding gold. With a more bullish inclination, they will look for a rationale for gold's positive price trend. This will then lead them to discover the very positive dynamics that govern the gold price. (We examine such scenarios in detail in the next chapter.)

Such an outcome will take considerable time. There is another possibility (which we label the "rational expectations" scenario and also examine in the next chapter). Central bankers may wake up and realize the degree to which official flows, including flows of borrowed gold, have been depressing the gold price. We know from Bank of England disclosures that the central banking community can easily determine how large these flows of official gold have been. As the gold market has become increasingly focused on official sales and mobilizations, it is possible that we will see more analysis and disclosures by the official sector.

Eventually we may see official sector studies that come to much the same conclusions that we have come to in this report: Flows of official gold that have been depressing the gold price are greater than has been believed and the gold price will eventually move much higher when today's unsustainable official flows abate.

Perhaps of greater interest will be the impact this realization will have for the large and sometimes very long-term borrowers of gold. These gold borrowings, which we believe approximate 8,000 tonnes, represent a massive short position in the gold market and one that is growing at a rapid rate.

Presently, these borrowers believe gold borrowings constitute a very low cost liability. If we are correct, these borrowers have, in fact, a multifaceted high cost liability. Gold has a positive trend real return of almost 2% over the very long run, and perhaps more in the current period. To this real base cost we must add the 1%-3% the central bank charges as interest. The intermediating bullion banker then adds a margin to cover his costs and risks of intermediation.

These three cost components constitute gold's real borrowing cost before inflation. Like other real assets the price of gold, and hence its borrowing cost, is linked to the inflation in the overall level of prices. In a world of 3% U.S. inflation, the combination of the three real components of the gold loan rate plus the inflation premium may translate into a double-digit borrowing cost.

Of greater interest will be the impact this realization will have for the borrowers of gold. In a world of 3% U.S. inflation, the combination of gold's real rate of appreciation, the central banks' gold loan rate, and the bullion bankers' margin may translate into a double digit borrowing cost.

However, the overall cost of gold borrowings is multifaceted. The above-discussed cost of gold borrowings arises from their trend interest rate alone. The flow of official gold, largely due to such borrowings, has deeply depressed the gold price below its long run equilibrium. Eventually, this flow of official gold must abate; then there will be an appreciation to this higher equilibrium price level. This one time rise in the gold price will constitute an additional cost to gold borrowers, much like an exchange rate loss on a foreign exchange denominated loan, which must be superimposed on the high trend nominal interest cost of gold loans.

One can argue that such an eventuality, even if it is unavoidable, lies so far in the future it does not matter. But the awareness of such an eventuality may not be so far in the future. Once the eventual outcome is understood and gold's real return is appreciated, central bank lenders and ultimate gold borrowers will act to avert such an outcome. A move to avert such an outcome is tantamount to a massive move to cover gold shorts. The longer this move to avert this outcome is delayed, the more disorderly will be its eventual resolution.

WHY GOLD LOANS CANNOT BE REPAID EN MASSE

We analyze these dynamics in detail in the next chapter. Before doing so, however, it is worth stressing that gold deposit loan intermediation is fundamentally different from deposit loan intermediation in any national currency. This difference creates special repayment obstacles and almost ensures severe financial instability if it goes too far.

All gold lenders move out of their normal currency environment when they borrow gold. It is like any borrower taking on a liability denominated in a currency different from the rest of his income stream and balance sheet. This applies even to mining companies who hedge production far forward, since most of their transactions are in their national currency and their shareholders expect returns in that currency. When a borrower extends his liabilities beyond his

Eventually, the flow of official gold must abate; then there will be an appreciation to gold's higher equilibrium price level. This one-time rise in the gold price will constitute an additional cost to gold borrowers, much like an exchange rate loss on a foreign exchange denominated loan.

base or “home” currency, he perceives an exchange rate risk. He regards himself as exposed to a loss in terms of his base currency if there is a large exchange rate fluctuation. Faced with a prospect of such a loss, he will move to repay his entire foreign currency liability.

Therefore, exchange rate risk considerations can lead borrowers of foreign-exchange-denominated loans to move to repay en masse all their foreign exchange borrowings in a way that borrowers in a national currency never do.

The same is true for gold borrowings. All gold borrowers have stepped into another country when they borrow gold. If there is a prospect of a large rise in the gold price in their currency, those who borrow for non-gold purposes perceive a risk. Those who borrow for gold purposes (mining companies, fabricators) perceive an opportunity cost. All these borrowers are motivated to exchange all their gold borrowings for liabilities in their own “home” currency when faced with the prospect of a large rise in the gold price in their “home” currency.

It is always possible for all firms that borrow in a foreign currency to repay en masse their loans. This is so because there exists an entire foreign-currency-denominated economy that has a huge liquid asset and liability structure in that currency. This foreign currency stock of deposit loan intermediation outstanding is not only vast; it is very stable, since its size is independent of the economy’s currency exchange rate. Many borrowers in a foreign currency can always “bid” in concert for the funds to repay their foreign exchange denominated loans from a vast sea of deposit holders in that currency.

Such a move to repay foreign exchange denominated loans will lead to an appreciation in the currency exchange rate these loans are denominated in, but the loan repayment transactions can be accomplished.

There is no comparable pool of available gold to bid for to repay gold loans. There is only one set of outstanding deposits: The central bank and private deposits that fund the gold liabilities of these borrowers from “another country.” When these borrowers sold the gold they borrowed, it did not flow back into a vast pool of deposit funds as do all currency loan proceeds. Rather it was fabricated into jewelry where it is likely to remain. The only deposits that all gold borrowers

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There is no comparable pool of available gold to bid for to repay gold loans. There is only one set of outstanding deposits – the central bank and private deposits that fund the gold liabilities of these borrowers. Only a cash settlement between the gold borrowers and the lending central banks can resolve a move by gold borrowers to repay en masse.

can bid for to pay their gold loans en masse is the deposits held by the central banks. In effect, only a cash settlement between the gold borrowers and the lending central banks can resolve a move by gold borrowers to repay en masse.

Perhaps the central banks will, in the end, agree to such a cash settlement to avert an inevitable crisis. But, at just such a juncture when gold lending has perhaps proceeded too far, the lease rates on gold loans may have risen to very high levels. With a move afoot to repay gold loans, the gold price will be rising. And the prospect of a yet higher gold price will probably have become apparent. At just such a juncture, central bank asset preference may join law, custom and public opinion and impede or prevent such a cash settlement. ♦

CHAPTER 11

END GAMES

Definition: *End Game – the last stage in various games – especially the stage of a chess game following serious reduction of forces.*

Every reader who has gotten this far must read this chapter.

INTRODUCTION

Throughout this book we have assembled what economists might term a “model” of gold supply/demand. We can use this model to project into the future supply/demand balances in the gold market based on assumed values of the variables that determine supply and demand.

With such a model we can make various plausible sets of assumptions and simulate various future supply/demand profiles. In this chapter we will use this simple model to simulate several future market profiles and their “End Games.”

In Chapter Three we discovered two absolutely crucial facts about the gold market: First, outstanding gold loans, at perhaps 8,000 tonnes, far exceed consensus estimates and, second, the evidence builds that global gold demand and the deficit in the gold market is perhaps 600 tonnes higher than Gold Fields Mineral Service, Ltd. (GFMS) estimates.

If gold loans (including private gold deposits) are already 8,000 tonnes, they are probably too large to be covered. If gold deposits and swaps by central banks are 7,500 tonnes, there is less gold in central bank vaults than is widely believed. If the gold market deficit is 600 tonnes higher than Gold Fields estimates, gold is flowing out of these central banks faster than anyone believes. If this continues, the volume of gold loans will mount rapidly and the volume of central bank gold available for release into the market will fall at an appreciable rate.

In Chapter Three we concluded, “*Such volumes of global gold borrowings may be forthcoming, but in time a limit will be reached. Then the flow of official gold will abate. Then the price of gold will rise. Then the “shorts” will want to cover. But then the aggregate short position will be too big to be covered.*” In this chapter we will consider this **End Game**.

THE MODEL: SIMULATING END GAME SCENARIOS

Throughout this book we considered the key variables that determine supply and demand in the gold market. If we pull all of our conclusions together, we have assembled what economists might term a “model” of gold supply/demand. We can use this model to project supply/demand balances in the gold market into the future based on assumed values of the variables that determine supply and demand. With such a model we can make various plausible sets of assumptions and simulate various future supply/demand profiles. In this chapter we will use this simple model to simulate several future market profiles and their “End Games.”

Let us review the key elements of our model:

1. The trend rate of growth of physical demand exceeds global Gross Domestic Product (GDP) and income growth by perhaps one-and-a-half percentage points when the gold price is constant in real or inflation adjusted terms. Despite the ongoing Asian currency crisis, we assume that rapid trend rates of economic growth in the emerging economies will result in a future rate of growth of global GDP of 3.5%. Global gold demand will exhibit a 5% trend rate of growth

- under these conditions if the real gold price remains constant.
2. Global gold demand has a long run elasticity with respect to the real gold price that approximates that of global jewelry demand. Compared to other commodities this elasticity is quite high, but it falls short of “unity.”
 3. Mine supply is quite inelastic with respect to the real gold price in both the short and long-term. The trend rate of growth in mine supply is somewhat less than the trend rate of growth of global GDP. Long run mine supply is determined chiefly by discoveries and technological change. Over the long sweep of history, the trend rate of growth of mine supply has been 2.8% per annum. Over the last two and a half decades, significant depletions weighed heavily against new discoveries; mine supply grew at a scant 1.8% rate. We assume that much higher gold prices in the future, the opening of the emerging world to exploration, and new heap leach technologies will raise the trend rate of growth in mine supply to 3% over the coming decade.
 4. Scrap supply is very price elastic in the short run. In the long run it is determined by a complex of variables. We assume that its primary long run determinant is the rate of growth of fabrication and bar hoarding demands. This is an extreme simplification which we adopt to facilitate our long-run simulations. It probably overstates future scrap supply growth.

For each plausible set of assumptions about the gold market, we can simulate a possible future scenario or outcome. Rather than giving the reader a bewildering array of future scenarios, we will provide just three. In each case we will focus on the End Game – that is, on the cumulative changes in outstanding gold loans and central bank reserves that result from future annual supply/demand deficits.

Sustained deficits imply an eventual exhaustion of physical gold from central bank vaults and an ever-growing mountain of gold loans. We will run our first two simulations to the point where central bank holdings of physical gold are exhausted. We will then consider the real world dynamics that are likely to prevail as this point of depletion is approached.

END GAME I – ARMAGEDDON

This past year the gold market traded at an average price of roughly \$330 and averaged somewhat below \$320 in the second half of the year. Everyone turned bearish; the consensus view has been that sustained official gold sales would depress the gold price further and

*End Game I – Armageddon.
This past year the gold market traded at an average price of roughly \$330 and averaged somewhat below \$320 in the second half of the year.*

What will happen if the gold price stays so depressed?

In making long run projections, we must employ values of supply/demand variables that are sustainable at \$320 gold. In effect, we must adjust for short run departures of these values from their long run equilibria.

keep it depressed for the foreseeable future. Based on this extremely negative outlook, producers were willing to sell forward 10 years into the future from so depressed a price base; hedge funds were willing to sell short to an unprecedented degree; and several smaller central banks gave up on gold and sold their holdings.

In the first End Game scenario we ask, what will happen if the gold price stays so depressed? We will project forward, utilizing our income and price elasticities, from the initial supply/demand conditions that prevailed in late 1997.

In Chapter Three and its appendices we discussed the most likely supply/demand balance for 1997. Gold demand rose at a 14% (WGC) to 18% (GFMS) rate on a decline in the gold price from \$388 in 1996 to \$347 in the first half of 1997. This would normally imply a yet larger increase in demand at a yet lower price below \$320 in the second half of 1997. However, the Far East Asian crisis has recently reduced demand by 400 tonnes or more at an annual rate. Third quarter WGC demand data suggest that the increase in global gold demand and the gold market deficit will be less in the second half than the first despite a lower average dollar gold price.

In making long run projections, we must employ values of supply/demand variables that are sustainable at \$320 gold. In effect, we must adjust for short run departures of these values from their long run equilibria. First, gold's short run apparent price elasticity exceeds its longer run elasticity. For a time, bargain basement buying elevates final end-user demands; this pulls demand from the future into the present, elevating final end-user demand above its sustainable rate. Also, inventory demands surge above trend.

However, in 1997 there were some offsetting factors. There has been a huge dollar appreciation, particularly against the gold demand intensive Far East, which we do not believe to be sustainable owing to a large U.S. current account deficit that is sure to widen significantly. Also, there are shorter run depressants on Far East demand that have been caused by the crisis conditions in the region. Overall, the Asian currency crisis is depressing gold demand in the region by many hundreds of tonnes and the strength in the dollar against virtually all other currencies is reducing global gold demand by somewhat more.

To screen out these short run factors and estimate the sustainable values of the supply/demand variables in the gold market at \$320 gold, we

apply our long run price elasticities of gold demand to 1997's decline in the real gold price. A decline in the nominal gold price from \$388 to \$320 amidst a 2.5% U.S. inflation rate and 3.5%-4% global income growth would have raised sustainable gold demand by 17%, had the dollar exchange rate been unchanged. In Chapters One and Three, we assumed that trend global gold demand was somewhat more than 4,000 tonnes in 1996. This projects total sustainable demand of more than 4,700 tonnes at \$320 gold. Because of weakness in Japan and emerging Asia in the second half of 1997, global gold demand will have fallen somewhat short of trend in 1997. Therefore, we will use 4,700 tonnes as our initial condition for 1997 demand in this simulation.

The consensus view is that the Asian currency crisis will depress economic growth in the region for years and that we will never again see the rapid growth that prevailed in the past. We disagree. The strong, real sector macroeconomic fundamentals that created such rapid economic growth still exist. However, it is possible that the current Asian economic and financial crisis will create a one-time hiatus in economic growth in the region relative to trend that will not be recouped in the subsequent economic recovery.

To incorporate this possibility, we will insert into our simulations one full year of zero global gold demand growth relative to trend in the year 1998. Trend increases in global gold demand are approximately 200 tonnes per annum. Far East Asian demand has probably been depressed recently by 400 tonnes at an annual rate. We do not expect this depressed rate of demand to persist for a whole year, since it largely reflects dishoarding. We expect a full recovery in the region's demand (relative to \$320 gold) by 1999. Inserting one year of zero global gold demand growth relative to trend is a "conservative" assumption; it allows for very little "catching up" to trend in a subsequent economic recovery.

On the supply side, so far this year we have had a small increase in mine supply and a significant decline in scrap supply. We regard mine supply as largely a function of new discoveries and new technologies.

When the gold price exceeds the cash costs of almost all of the worlds' mines, as it usually does, a rise in the gold price does not have a significant impact on the rate of growth of mine supply. Because one is then in the near vertical portion of the mine supply cost curve, there is little incremental production that can be either brought on stream or closed down in response to a change in the gold price.

To screen out these short-run factors we apply our long-run price elasticities of gold demand to 1997's decline in the real gold price. A decline in the nominal gold price from \$388 to \$320 amidst a 2.5% U.S. inflation rate and 3.5%-4% global income growth would have raised gold demand by 17%, had the dollar exchange rate been unchanged. Because of weakness in Asia, global gold demand fell short of trend in 1997. Therefore, we will use 4,700 tonnes as our initial condition for 1997 demand in this simulation.

It is possible that the current Asian economic and financial crisis will create a one-time hiatus in economic growth in the region relative to trend that will not be recouped in the subsequent economic recovery. To incorporate this possibility, we will insert into our simulations one full year of zero global gold demand growth relative to trend in the year 1998.

On the supply side, at \$320 an ounce the odds favor basically no growth in mine supply over a five to 10-year time frame.

However, when the gold price is very depressed, and one is well into the flat portion of the cost curve, there are many mines at the high cost end of the curve which become uneconomic. Because miners initially expect a decline in the gold price to be transitory and because mine closures cannot be readily reversed, closures are slow to materialize. Eventually the high grade ores are mined, rendering the remainder uneconomic even at higher prices, and the mines are then closed. At \$320 an ounce, the gold price has become so depressed relative to the cost of mine production that we will continue to see significant early mine closures and deferrals of many proposed projects. In our view, at so deeply depressed a real gold price, the odds favor basically no growth in mine supply over a five to 10-year time frame.

Scrap is the most difficult variable to model. Our basic assumption is that scrap supply follows physical demand. Yet in 1997 physical demand has exploded while scrap supply has fallen sharply. Scrap has a significant short run price elasticity, but its longer run price elasticity is much less. If the gold price stabilizes at \$320, historical precedents indicate that scrap supply will rebound significantly in coming years and then begin to grow in tandem with physical demands.

To keep things simple in establishing initial conditions for our simulation, we will use depressed scrap supply levels for 1997 and 1998, but will then set scrap supply at a much higher level for 1999 and project it forward based on overall physical demand growth. This is probably a far too conservative assumption; it probably overstates future scrap supply and will therefore lead to an understatement of future gold market supply/demand deficits.

One last decision faces us. Shall we utilize a constant real or constant nominal gold price to describe a sustained depressed gold price condition? If we use a constant nominal price, the real gold price will keep declining. Because the inframarginal portion of the cost curve is quite flat, when the gold price falls very low relative to the marginal cost of production gold mine supply becomes quite price elastic. Our guess is that we will then quickly run into serious negative growth in mine output. Therefore, again in the interest of simplification, we will assume a constant real gold price, a 3% U.S. inflation rate, and a 3% rate of increase in the nominal dollar gold price.

The scenario for End Game I follows.

Scrap has a significant short run price elasticity, but its longer run price elasticity is much less. We will use depressed scrap supply levels for 1997 and 1998, but will then set scrap supply at a much higher level for 1999 and project it forward based on overall physical demand growth.

We will assume a constant real gold price, a 3% U.S. inflation rate, and a 3% rate of increase in the nominal dollar gold price.

END GAME I

Growth Assumptions	1997	Thereafter		Other Assumptions									
Demand	5.50%	5.00%		Central Bank Sales = 50% of annual deficit									
Scrap	5.50%	5.00%		Gold Borrowings = 50% of annual deficit									
Mine Supply	1.42%	0.00%		U.S. CPI Inflation p/a = 3%									
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Demand	4,050	4,700	4,700	4,935	5,182	5,441	5,713	5,999	6,298	6,613	6,944	7,291	7,656
Supply	2,990	3,000	3,000	3,157	3,195	3,235	3,276	3,320	3,366	3,414	3,465	3,518	3,574
Scrap	644	600	600	757	795	835	876	920	966	1,014	1,065	1,118	1,174
Mine Supply	2,346	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Deficit	1,060	1,700	1,700	1,778	1,987	2,206	2,437	2,678	2,932	3,199	3,479	3,773	4,081
Central Bank Sales	530	850	850	889	993	1,103	1,218	1,339	1,466	1,599	1,739	1,886	2,041
Gold Borrowings	530	850	850	889	993	1,103	1,218	1,339	1,466	1,599	1,739	1,886	2,041
Central Bank Gold		34,000	33,150	32,261	31,268	30,164	28,946	27,607	26,141	24,541	22,802	20,916	18,875
Gold Loans		7,500	8,350	9,239	10,232	11,336	12,554	13,893	15,359	16,959	18,698	20,584	22,625
Physical Gold		26,500	24,800	23,022	21,035	18,829	16,392	13,714	10,782	7,583	4,104	331	(3,750)
Avg. Nominal Gold Price (from 1998 +3%/pa)	387.87	320.00	329.60	339.49	349.67	360.16	370.97	382.10	393.56	405.37	417.53	430.05	442.95
Equilibrium Price (from 1999 +6%/pa)	600.00	636.00	655.08	694.38	736.05	780.21	827.02	876.64	929.24	985.00	1,044.10	1,106.74	1,173.15

The results are quite astonishing. By the year 2007 physical demand has risen to 7,291 tonnes. After a roughly 500-tonne rise in scrap supply, the deficit in the gold market has expanded to 3,773 tonnes per annum. The cumulative deficits over 10 years leave central bank coffers almost empty of physical gold at the end of 2007.

This End Game will never play out. It requires a steady increase in official gold sales and gold borrowings despite a decade of 3% per annum appreciation in the nominal gold price. The only reason why central banks sell gold is that they have backward-looking (adaptive) expectations regarding the future rate of change of the price of gold. Similarly, the shorts in the gold market mistakenly believe that their gold borrowings have a negative real cost. A decade of 3% appreciation in the price of gold will raise their expectations regarding the future return to holding gold and the future cost of borrowing gold.

The results are quite astonishing. We begin with a global gold market deficit of 1,700 tonnes in 1997 and 1998. Initially there are 34,000 tonnes of gold held by the official sector, 7,500 tonnes have been lent out, leaving 26,500 tonnes of physical gold in official coffers. By the year 2007 physical demand has risen to 7,291 tonnes. After a roughly 500-tonne rise in scrap supply, the deficit in the gold market has expanded to 3,773 tonnes per annum. The cumulative deficits over 10 years leave central bank coffers almost empty of physical gold at the end of 2007.

No outlook could be further from the prevailing bearish consensus outlook than this one. More and more analysts are comparing the current gold market to the silver market in the late 19th century, when “demonetization” of silver depressed the price of silver for decades and depressed it to a real level from which it never recovered. It is apparent from this simulation that just the opposite occurs. Central bank flows will not be able to keep the gold price depressed at current levels for much more than a decade, after which point the gold price will rise in real terms to a level not seen in over a decade.

Of course, this End Game will never play out. It requires a steady increase in official gold sales and gold borrowings despite a decade of 3% per annum appreciation in the nominal gold price. Remember from Chapter Ten, the only reason central banks sell gold is that they have backward-looking (adaptive) expectations regarding the future rate of change of the price of gold and mistakenly believe gold has a negative real return. Similarly, the shorts in the gold market mistakenly believe that their gold borrowings have a negative real cost.

However, as these market participants have backward-looking expectations, a decade of 3% nominal appreciation in the price of gold will raise their expectations regarding the future return to holding gold and the future cost of borrowing gold.

As the outstanding volume of gold borrowings rises, so will the gold loan rate. This rising gold loan rate will further increase the perceived return to holding gold and the perceived cost of borrowing gold. This will further reduce the propensities of the central banks to sell and the shorts to add to their borrowings.

As End Game I requires these activities to intensify, not abate, it will never happen. In fact, in Chapter Three we argued that central banks will not sell all of their gold and some limit to gold lending will be

reached sooner rather than later. But let us assume that the currently ill-informed central banks and shorts in today's gold market remain bearish and run down the central bank hoard to zero, just to see how this End Game plays out.

In recent years central bank gross sales have exceeded net sales; in effect, there have been official buyers who want to hold gold. Net central bank sales have accounted for less than half of the flows of gold out of central bank coffers; the balance has been accounted for by gold loans. Let us assume that gross official sales exceed net sales by a 1.5 to 1.0 margin, that net official sales account for half of total annual official gold flows, and gold loans account for the other half of such flows.

At the End Game, we will have reduced official holdings to close to 21,000 tonnes (all of it now in the form of gold loans). Of this, 6,500 tonnes will have been newly acquired by central banks who want to hold gold. Over this decade, world official exchange reserves will have almost doubled and gold will account for considerably less than 10% of global reserves. Most of the central banks who will still hold gold (now all in the form of gold loans) will either want to hold it or will be prevented by law, custom or public opinion from selling. As the volume of lendable official gold declines, the gold loan rate will rise. By then, all official gold holdings will take the form of interest-bearing gold loans. With a rising gold loan rate, there will no longer be a reason for these central banks to sell their gold.

As for the shorts, there will be almost 21,000 tonnes of them. As the rate of interest on gold loans rises, the shorts will want to cover. But it is not possible to buy back 21,000 tonnes of gold. By then, that gold they sold short will be bangles adorning an Indian woman or rings and bracelets bedecking a British secretary or chains around the neck of an Italian stallion on the Jersey boardwalk. And if they try to buy it back from them, the price increase that will ensue will send hoards of trend-following speculators into the market with competing bids.

Of course, the price of gold will rise in any case. In End Game I, when the central bank's coffers of physical gold are empty and there are no more flows of official gold, the total supply of gold will fall by 3,773 tonnes against 7,291 tonnes of physical demand. When this supply abates, the market must clear, and it will clear primarily by having a higher gold price ration demand down to the level of mine and scrap supply. By then, the price of gold in nominal terms will be \$430. If we

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As for the shorts, there will be almost 21,000 tonnes of them. As the rate of interest on gold loans rises, the shorts will want to cover. But it is not possible to buy back 21,000 tonnes of gold.

When the central banks' coffers of physical gold are empty, the total supply of gold will fall by 3,773 tonnes against 7,291 tonnes of physical demand. When this supply abates, the market must clear, and it will clear primarily by having a higher gold price ration demand down to the level of mine and scrap supply. If we apply our long run elasticity of demand to this scenario the nominal gold price will have to rise above \$1,100 to reach its long run equilibrium.

The only way out will be for the central banks to sell their gold to the shorts. Yet, most of the remaining central banks may be compelled by law, custom, and public opinion to hold their gold.

End Game I concludes in an unimaginable crisis, and in only 10 years.

apply our long run elasticity of demand to this scenario (see Chapter Three), the nominal gold price will have to rise above \$1,100 to reach its long run equilibrium. Of course, all manner of trend-following speculation will ensure a wild overshoot of such a long-run equilibrium.

Alas for the shorts. The gold price will skyrocket. Lease rates will skyrocket. Should they try to buy their gold shorts back from these Indian women and British girls and Italian stallions they will skyrocket the price of gold far beyond any long run equilibrium. The only way out will be for the central banks to sell their gold to the shorts.

Yet most of the remaining central banks may be compelled by law, custom, and public opinion to hold their gold. The remainder will probably want to hold their now high-yielding gold. These central banks will also realize that the ultimate borrowers of their gold will be in some cases insolvent. The asset they thought they held because it was no one's liability and free of default risk will now be revealed to be a paper asset denominated in gold that is in fact fraught with default risk. Not only will the central banks be averse to selling their gold to bail out the shorts; some central banks will feel compelled to call in their gold loans for the physical gold that is absolutely free of default risk.

End Game I concludes in an unimaginable crisis, and in only 10 years. We will never get there. But it illustrates several things. First, it shows us how untenable \$320 gold is over any multi-year time horizon. Second, it illustrates how mistaken the current thinking of central banks and gold borrowers is and how dramatic the reversal in expectations and behavior will be at some point in the future. Third, it shows that a persistent annual flow of gold loans creates a balance sheet legacy which will eventually create a market crisis.

These extreme End Game outcomes illustrate some of the strains that will surface in the gold market over time as less extreme and more realistic End Games play out.

END GAME II – REALITY?

Because they only look backward, central banks and the shorts in the gold market have very mistaken expectations about gold's future return. We should expect this to persist until a sustained bull market provides their adaptive expectations behavior with enough past price appreciation to make them expect future positive returns.

It has been said that the official sector has tended to buy pullbacks from bull market peaks in gold and sell rallies off bear market bottoms, and clearly something like this is happening in the current gold environment, where central banks are depressing the gold price by selling and lending huge volumes of gold, thereby creating the very deep departure from gold's long run commodity equilibrium that ensures exceptional returns to any long-term holders.

We expect that an abatement in unusually intense EMU-related official sector selling and a recovery in Asian demand will lead to a rally in gold in 1998. However, on any such future rally, we should expect some further central bank selling, at least until the 1994-1996 trading range just below \$400 is breached.

We will probably see a large increase in producer hedging as well. Gold producers are mining engineers. They graduated from the Colorado School of Mines or its equivalent, and they have spent their professional careers focused on the finding, mining, and processing of rock. We should not expect them to understand very well the dynamics of the gold market.

Therefore, with adaptive expectations behavior, producers should expect any rally in the gold price to find resistance at \$370-\$420 and hedge aggressively on a scale up. For many, the brush with bankruptcy at \$300 gold and below will appear to have been a harsh lesson that they had better hedge when they can. The few who hedged particularly aggressively, hedging 10 years of production and more than 100% of reserves, have been rewarded with speculative profits that exceed anything they hoped to earn from mining their gold. The lessons of 1997 should ensure exceptional volumes of producer hedging on any rally.

As for the speculative shorts and the gold carry trade, much of this will be reversed on any rally. This will provide the initial impetus for higher prices. The total volume of short covering could prove quite massive. However, remembering the dynamics of resistance and support in the gold market set out in Chapter Four, any such short covering rally will meet very formidable, albeit transitory, resistance. End use demand will stop growing; in fact, the short run elasticity of gold demand may create a brief period in which end use demand actually declines. More importantly, inventory demands will fall by many hundreds of tonnes and the option mechanism in the market will hammer the market scale up with many more hundreds of tonnes of borrowed gold.

We expect that an abatement in unusually intense, EMU-related selling and a recovery in Asian demand will lead to a rally in gold in 1998. However, on any such future rally we should expect some further central bank selling, at least until the 1994-1996 trading range just below \$400 is breached.

Producers should expect any rally in the gold price to find resistance at \$370-\$420 and hedge aggressively on a scale up. The lessons of 1997 should ensure exceptional volumes of producer hedging on any rally.

As for the speculative shorts and the gold carry trade, much of this will be reversed on any such rally.

However, remembering the dynamics of resistance and support in the gold market set out in Chapter Four, any such short covering rally will meet very formidable, albeit transitory, resistance. Once the gold price reaches its \$380-\$400 prior trading range it should trade sideways for some time, much as it did after the 1993 rally.

Therefore, any price advance may well move stepwise. Since producers and central banks will perceive formidable resistance in the \$370-\$420 range and resume selling, once the gold price reaches its \$380-\$400 prior trading range it should trade sideways for some time, much as it did after the 1993 rally. We regard an annual deficit run rate of 1,700 tonnes, which is needed to keep gold at \$320, as unsustainable, even amidst the prevailing market gloom. But the 1,100 tonne deficits of recent years at \$385 gold – deficits which would materialize at \$400 gold today – seem more plausible.

In End Game II we develop a crisis scenario similar to that of End Game I. However, in the initial years of this scenario, the gold price has an initial recovery rally from \$320 to the \$400 level, and then rises 3% per annum in nominal terms. After that, the global gold market deficit increases unrelentingly as global demand outstrips mine and scrap supply.

We must choose a dollar gold price path for End Game II. Should we build our projections assuming a constant nominal dollar gold price or a constant real gold price? The problem with a constant nominal dollar gold price is that, even if we recover to the \$388 average gold price of 1996 by 1998-1999, in six years at 3% inflation we will be back to \$320 gold in real terms. Worse yet, the real dollar gold price then keeps falling. This scenario soon approaches End Game I. And beyond that point in time it initiates outright negative mine supply growth and results in a more drastic drawdown of official gold than End Game I. In the end it results in a scenario little different from End Game I. Therefore, it is best to assume a constant real dollar price of gold.

What then should be our assumptions for End Game II? First, we will assume 1997 will prove to have been a year in which the average gold price was depressed by central bank selling and the Asian currency crisis. In 1998 we will assume a one-year hiatus in trend gold demand owing to the Asian currency crisis. We will also assume a one year hiatus in gold mine supply owing to the low prices of 1997-1998. By 1999 the gold market will recover to conditions similar to 1994-1996. The dollar exchange rate will revert to its mean. Going forward, global GDP will resume its 3.5% plus trend growth rate, led by growth in emerging Asia. Global gold demand will resume its trend rate of 5% per annum. Mine supply will grow above its very long run trend at 3% per annum rate. U.S. inflation will be 3% per annum. The gold price will recover to 1996's real level of \$388, which by 1999 will be above \$400.

In Chapter Five we set forth this scenario through year 2002 assuming the real gold price of 1994-1996 is regained by 1999 and persists thereafter. On the following page we project it to the ultimate exhaustion of central bank gold.

END GAME II

	Growth Assumptions			1997	Thereafter	Other Assumptions										
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Demand	4,050	4,700	4,600	4,465	4,688	4,923	5,169	5,427	5,699	5,984	6,283	6,597	6,927	7,273	7,637	8,018
Supply	2,990	3,000	3,000	3,199	3,309	3,423	3,542	3,664	3,792	3,923	4,060	4,202	4,349	4,502	4,660	4,824
Scrap	644	600	600	710	746	783	822	863	906	951	999	1,049	1,101	1,157	1,214	1,275
Mine Supply	2,346	2,400	2,400	2,489	2,564	2,641	2,720	2,801	2,885	2,972	3,061	3,153	3,248	3,345	3,445	3,549
Deficit	1,060	1,700	1,600	1,266	1,379	1,499	1,627	1,763	1,907	2,060	2,223	2,395	2,578	2,771	2,977	3,195
Central Bank Sales	530	850	800	633	690	750	814	881	954	1,030	1,111	1,197	1,289	1,386	1,488	1,597
Gold Borrowings	530	850	800	633	690	750	814	881	954	1,030	1,111	1,197	1,289	1,386	1,488	1,597
Central Bank Gold		34,000	33,200	32,567	31,877	31,128	30,314	29,433	28,479	27,449	26,338	25,141	23,852	22,466	20,978	19,380
Gold Loans		7,500	8,300	8,933	9,623	10,372	11,186	12,067	13,021	14,051	15,162	16,359	17,648	19,034	20,522	22,120
Physical Gold		26,500	24,900	23,634	22,255	20,756	19,129	17,366	15,459	13,399	11,176	8,781	6,204	3,432	455	(2,740)
Avg. Nominal Gold Price (from 1999 +3%/pa)	387.87	330.00	340.00	411.49	423.83	436.55	449.65	463.14	477.03	491.34	506.08	521.26	536.90	553.01	569.60	586.69
Equilibrium Price (from 1999 +6%/pa)	600.00	636.00	655.08	694.38	736.05	780.21	827.02	876.64	929.24	985.00	1,044.10	1,106.74	1,173.15	1,243.54	1,318.15	1,397.24

In End Game II, we almost exhaust the official hoard of gold in 13 years. It is remarkable that, with an initial much lower deficit and 3% (as opposed to 0% mine supply growth), it takes only an additional three years to deplete the hoard of official physical gold. Why is this? The answer lies in the widening of the gold market deficit under constant real price assumptions. This deficit widens so rapidly in the distant years that a mere three more years of deficits results in a further drawdown of official gold of almost 8,000 tonnes. This late period drawdown offsets the much smaller differences between the deficits in End Games I and II in the early years.

In End Game II we develop a crisis scenario similar to that of End Game I. However, in the initial years of this scenario, the nominal gold price has an initial recovery rally from \$320 to the \$400 level and then rises 3% per annum in nominal terms. After a brief hiatus, the global gold market deficit begins to increase unrelentingly as growth in global demand persistently outstrips 3% per annum growth in mine supply. Gold lease rates should also rise as the outstanding stock of lendable gold is gradually called upon.

The central banks and the shorts, have backward-looking (adaptive) expectations regarding gold's prospective return (or cost). Such a substantial rise in the nominal price of gold and a gradual rise in the gold loan rate should reduce their propensity to sell gold. This implies more, not less selling.

As our relevant market participants, the central banks and the shorts, have backward-looking (adaptive) expectations regarding gold's prospective return (or cost), a substantial and sustained rise in the nominal price of gold over time and a further gradual rise in the gold loan rate should reduce their propensity to sell gold. However, a 3% annual nominal price appreciation in gold from our \$400 initial condition is consistent with a rapidly growing market deficit. This implies more, not less, selling.

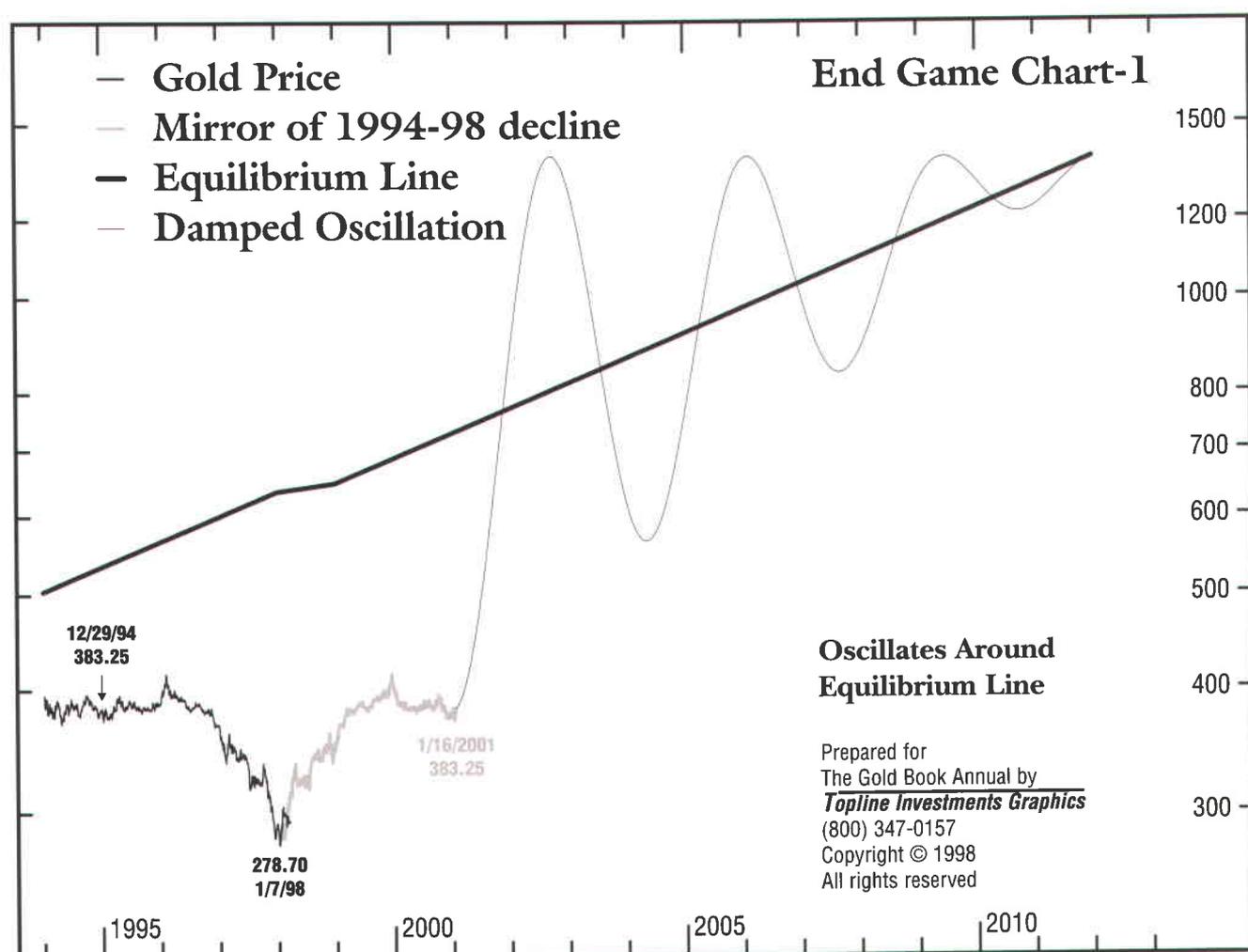
Therefore, it is likely that at some point some years out, desired selling by central banks and shorts will be less than the annual deficits projected in End Game II. Then the gold market will clear at higher prices. With higher rates of gold price appreciation, the "adaptive" expectations of central banks and shorts regarding gold's future return (and cost) will rise.

Therefore, desired selling by central banks and shorts will be less than the deficits projected in End Game II. The gold market will then overcome its especially strong dynamics of price resistance and spin off the trajectory of End Game II in an upward direction to gold's higher commodity price equilibrium.

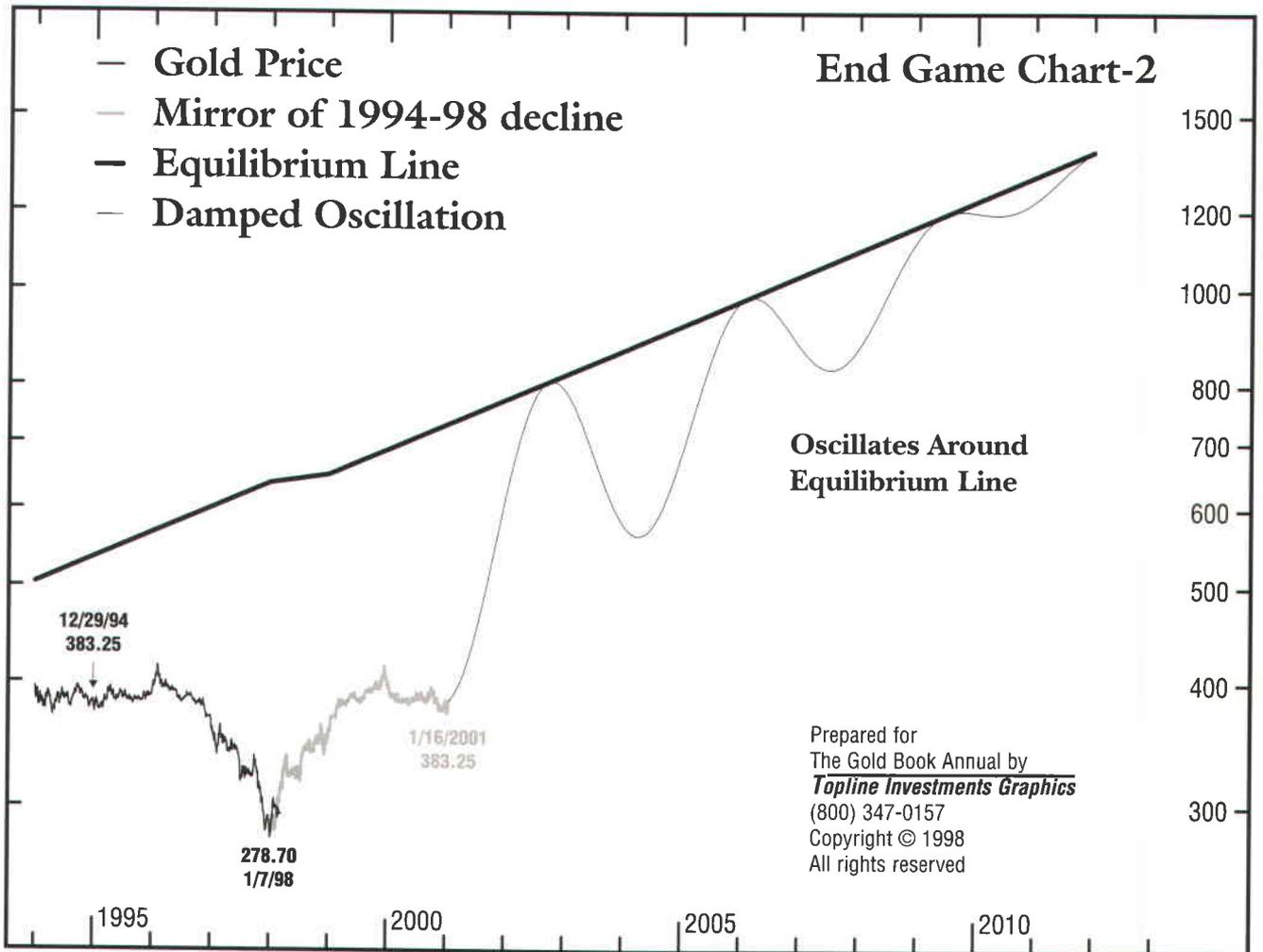
This pattern of adaptive expectations behavior sets into motion a positive feedback loop wherein an emerging bull market in gold reduces the propensity to sell of central banks, producers and other shorts, which in turn reduces the market deficit. The gold market will then overcome its especially strong dynamics of price resistance and spin

off the trajectory of End Game II in an upward direction toward gold's higher commodity price equilibrium. Of course, speculative, trend-following behavior and the attempt by the shorts to actually reduce their outstanding shorts will result in the market overshooting this equilibrium by a large margin.

Below we provide two simulations of such a "realistic" market outcome. In both simulations the gold price recovers to resistance, trades there for a while, and then climbs to its long-run equilibrium. In the first of these simulations, we use a damped oscillation of the gold price *around* its long run equilibrium as the shorts scramble to cover and Western speculators pour on board on the long side.



In our second simulation, we use a damped oscillation of the gold price *toward* its long run equilibrium. This case emphasizes the role of the dynamics of price resistance discussed in Chapter Four as well as transitory sources of supply such as scrap generation and the reopening of closed and largely depleted mines. The future reality will probably lie somewhere between these two scenarios.



END GAME III – RATIONAL EXPECTATIONS

The above End Game scenarios assume backward-looking (adaptive) expectations regarding gold's return and borrowing cost on the part of central banks and the shorts in the market. Such behavior is essentially irrational. Sometimes economic agents are governed by rational expectations that reflect all there is to know about prospective returns.

In essence, if the central banks and the shorts in the gold market were aware of the facts, we would see a very different outcome.

We need not project this third End Game. Why? Because End Game III is an almost instant price appreciation in gold to a level that is well above its long run equilibrium. This occurs in order to induce the central banks, by way of a very high gold price, to sell their gold to the shorts, followed by a decay in the gold price to gold's long run equilibrium. Let us explain.

If the central banks realized that gold had a long-run, positive-real return they would not want to sell their gold. If they realized the implications of End Games I and II, they would realize that, at some point in the future, gold would have a short run return that far exceeded its long run real return. This would reinforce their desire not to sell. And lastly, they would realize that their current lending of gold will eventually lead to financial instability. Above all, central bankers abhor financial instability. Given these expectations, the central banks should immediately stop selling and lending their gold.

If the shorts in the market realized the same thing, they would have a double impetus to cover their shorts. First, they would do so because they face a two-fold cost to being short: Gold borrowings have a long run, small positive real cost and a shorter run, one-time large cost, as the gold price eventually rises to its long run price equilibrium. Second, they would realize that, with more than 8,000 tonnes of outstanding gold borrowings, they have too much company; any attempt to cover all these shorts would lead to a price spike well above gold's much higher, long run equilibrium – a spike which would inflict massive losses on those shorts who are slow-footed in the race to cover.

Faced with these rational expectations by both lending central banks and their borrowers, how should the gold market clear? Both parties would realize that, in the long run, gold will trade at an equilibrium that far exceeds prevailing prices. At whatever equilibrium it settles, it will then earn its long run, positive real return on an ongoing basis. This should greatly reduce desired outstanding gold loans.

Since the shorts cannot cover 8,000 tonnes of gold, they must induce the central banks to sell enough gold to reduce or eliminate their shorts. Central banks should not want to sell their gold to the shorts unless they get a premium above this long run equilibrium price. In a world of rational expectations, the shorts and the central banks would negotiate such a transaction at some premium well above gold's long run price equilibrium.

Of course, all market participants will not respond so soberly to full information about the realities of the gold market. Reality will dawn piece meal and, in doing so, it will drive the gold price up. As the gold price rises and questions are asked why, the recognition of reality will spread at a quickening pace, driving prices yet further. Price appreci-

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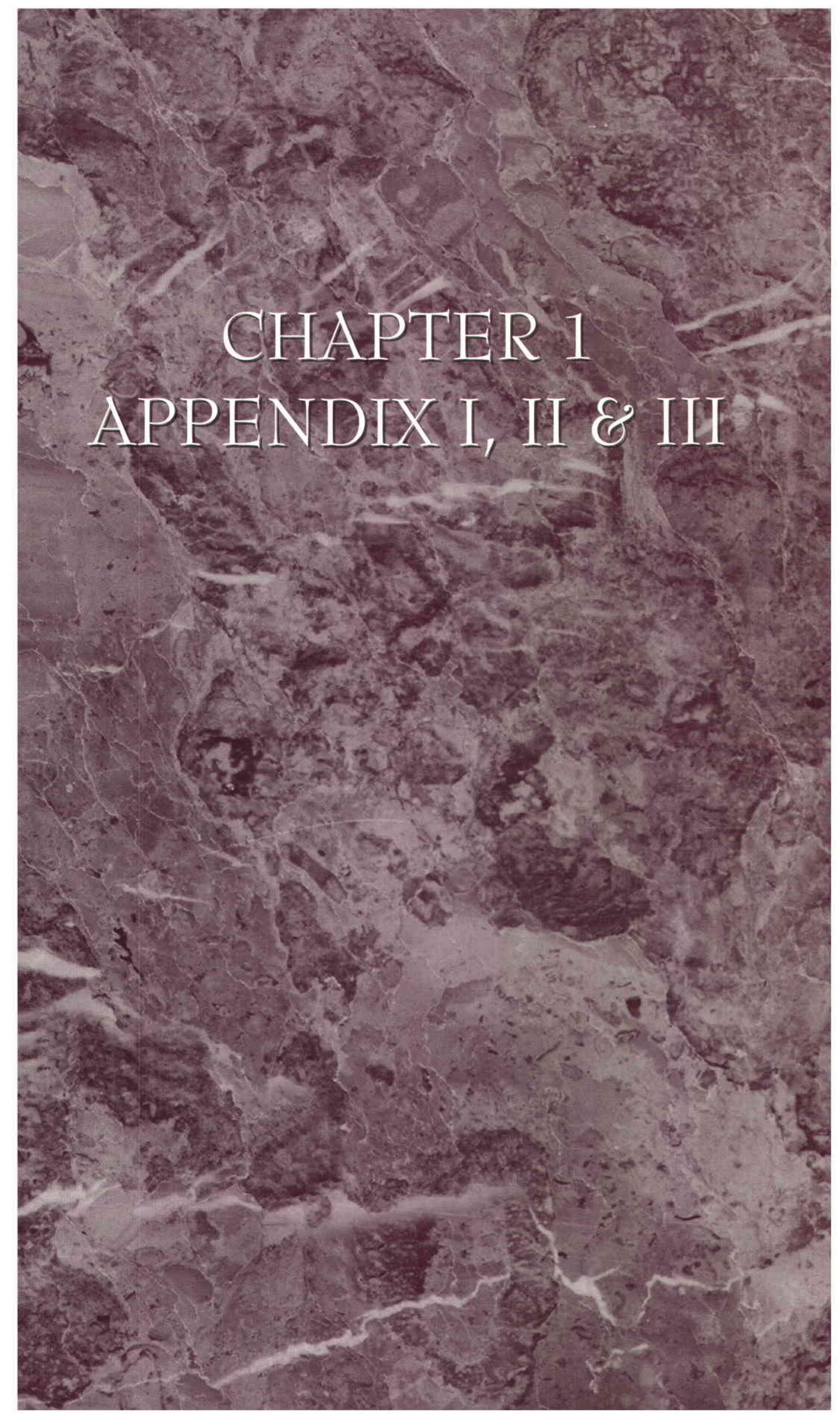
If the shorts in the market realized the same thing, they would have a double impetus to cover their shorts. First, gold borrowings have a long run small positive real cost and a shorter run one-time large cost, as the gold price eventually rises to its long-run price equilibrium. Second, with more than 8,000 tonnes of outstanding gold borrowings, they have too much company; any attempt to cover all these shorts would inflict massive losses on those shorts who are slow-footed in the race to cover.

Both parties would realize that, in the long run, gold will trade at a long run equilibrium that far exceeds prevailing prices. Since the shorts cannot cover 8,000 tonnes of gold, they must induce the central banks to sell enough gold to reduce or eliminate their shorts. Central banks should not want to sell their gold to the shorts unless they get a premium above this long run equilibrium price.

In a world of rational expectations, the shorts and the central banks would negotiate such a transaction at some premium well above gold's long run price equilibrium.

ation will draw the usual trend-following speculation to the market, thereby further fueling the bull move.

Because the gold market has already moved so far into disequilibrium, the dawning of rational expectations should lead inescapably to some measure of bull market pandemonium before the central banks and the shorts might enter into a “cash settlement.” Of course, even then such a “cash settlement” may not be easy to achieve. By then most of the official gold will have wound up in those central banks which held the metal because of politically backed customs, because of laws that require gold holdings, or because of a very strong preference for gold as a reserve asset. ♦

The background of the entire page is a classic marbled paper pattern. It features a complex, organic design with swirling, vein-like patterns in various shades of brown, tan, and beige. The overall effect is reminiscent of natural stone or aged parchment, with a rich, textured appearance.

CHAPTER 1
APPENDIX I, II & III

CHAPTER 1 APPENDIX I

UNDERESTIMATED OFFICIAL GOLD FLOWS 1990-1992

We will see in Chapter Two that large flows of borrowed gold provided the unrecorded supplies in 1994-1995 that corresponded to the unrecorded gold demands postulated in Chapter One of this book. However, the analysis of Chapter One suggests that Gold Fields Mineral Service, Ltd. (GFMS) systematically underreports demand. In Chapter Six we show that this underestimation of demand increased progressively from 1991 through 1996, but that some underestimation probably existed to a lesser extent in the early 1990s. If Gold Fields Mineral Services has consistently underestimated demands, there must have been significant unrecorded supplies in years prior to 1994. There were underestimated flows of borrowed gold in those years, but they could not have been as great as they were in 1994-1995. (See Chapter Two for details.) It is our opinion that there were official sales from Russia and the Middle East during those years that were understated by GFMS. We discussed these flows in a paper Frank Veneroso presented at the Australian Gold Conference in Kalgoorlie in March of 1996. We present here the relevant portion of that paper.

Based on GFMS data, in this three year period from 1990 through 1992 official sector sales totaled 908 tonnes or roughly 300 tonnes per annum. This reflects large sales by Belgium, Canada and the Netherlands. There are small sales indicated for Abu Dhabi and Iraq and none for Saudi Arabia. If one looks at the difference between the Gold Fields data, including and excluding the former Communist countries, it appears that total former communist bloc official sales during this period are estimated at 245 tonnes. *It is my contention that Gold Fields estimates of official sector sales by financially distressed countries in the Middle East and by Russia are too low.* In addition there are some smaller flows of official gold that Gold Fields has either ignored or understated.

ABU DHABI

I believe, on good information, that Abu Dhabi held roughly 400 tonnes of gold and sold almost all of it in the period 1990-1993, with most of the sales falling into 1991-1992. Gold Fields may underestimate official sales here by roughly 300 tonnes.

IRAQ

I believe that Saddam Hussein had several hundred tonnes of gold outside Iraq at the time of the Gulf War. To meet expenditures on imports during the embargo that ensued, this gold was sold for foreign exchange in the 1990-1992 period. Reading past Gold Fields' reports suggests that their estimate of Iraqi sales was less than 100 tonnes.

SAUDI ARABIA

In February and March of 1991, a precipitous drop in the gold price was accompanied by widespread rumors of a Saudi sale to pay for British airplanes. I have received several reports from good sources of a large sale (perhaps several hundred tonnes) of gold at that time. To my knowledge, Gold Fields has made no allowances for Saudi sales.

RUSSIA

After the coup against Gorbachev, the Russians made several statements of past gold reserve positions. In essence, the Russian authorities have indicated that over 500 tonnes of official gold were liquidated in the 1990-1992 period, against an estimate of roughly 300 tonnes carried by Gold Fields. If anything, this is an underestimate. With the opening of Russia, it has become increasingly clear that there were many stockpiles of all types of metals in the former Soviet Union. There is good reason to believe that there were strategic stockpiles of bullion, stockpiles of gold coin and jewelry, government (KGB?) bullion reserves outside the principal one, and industry stocks (of salts, wires, etc.), all of which probably were in part sold to the West for foreign exchange.

1 – Official Russian Gold Statistics 1984-1993

	Mine Output	Scrap Recovery	Domestic Use	Domestic Surplus	Change in Reserves	Total Reserves	Sales (tonnes)	Sales (million oz)
1984	251.8	3.0	99.4	155.4	142.3	719.5	13	0.4
1985	264.0	3.0	99.1	167.9	-132.1	587.4	300	9.6
1986	271.3	3.0	102.8	171.5	93.5	680.9	78	2.5
1987	260.0	2.0	107.6	154.4	104.4	785.3	50	1.6
1988	277.6	5.0	114.6	168.0	65.1	850.4	103	3.3
1989	304.0	10.0	126.6	187.4	-66.4	784.0	254	8.2
1990	302.0	15.0	130.8	186.2	-299.4	484.6	486	15.6
1991	270.0	12.0	100.0	182.0	-200.6	284.0	383	12.3
1992	221.0	18.0	66.0	173.0	-40.0	244.0	213	6.8
1993	200.0	24.0	55.0	169.0	110.0	354.0	59	1.9

In essence, the Russian authorities have indicated that over 500 tonnes of official gold were liquidated in the 1990-1992 period, against an estimate of roughly 300 tonnes carried by Gold Fields. Gold Fields has insisted that its information is superior to official data. All other parties I have discussed this with disagree. Though they admit the official information may be flawed, it is, if anything, an underestimate. With the opening of Russia, it has become increasingly clear that there were many stockpiles of all types of metals in the former Soviet Union. There is good reason to believe that there were strategic stockpiles of gold, stockpiles of coin and jewelry, government (KGB?) reserves outside the principal one, and industry stocks, all of which probably were in part sold to the West for foreign exchange. It appears a reasonable assumption that former Soviet sales were 200 tonnes more – and possibly much more – than the 300 tonnes estimated by Gold Fields. When one looks at the accompanying table, it is reasonable to assume that unrecorded Middle East and former Soviet liquidations of gold were on the order of 900 tonnes in excess of Gold Fields' estimates over the period 1990-1992. ♦

Under-Reported Official Sales 1990-1992			
	Gold Fields	Veneroso	Difference
Abu Dhabi	50-100	400	350-300
Iraq	100	200-300	100-200
Saudi Arabia	0	100-300	100-300
Russia	300	550-800	250-500
Total	500-550	1250-1800	750-1250

CHAPTER 1 APPENDIX II

GFMS UNDERESTIMATES WESTERN DISINVESTMENT IN THE 1990s

Something is wrong with the Gold Fields Mineral Services (GFMS) data on Western investment/disinvestment. Our thesis is very simple. According to GFMS, from 1989 to 1996 cumulative disinvestment by Western investors was a mere 106 tonnes.

Gold, Western Disinvestment, GFMS Estimates (Tonnes)								
Year	1989	1990	1991	1992	1993	1994	1995	1996
Tonnes	1	-188	302	-29	-264	155	-33	163

According to the CFTC, over this 10-year period speculative positions on the Comex went from long to short, with an overall swing of roughly 200 tonnes. We know that OTC fund activity exceeds Comex activity, and probably by a wide margin. This implies yet greater Western speculative selling via derivatives.

Western selling by way of derivatives probably dwarfed the mere 106 tonnes of cumulative disinvestment estimated by GFMS from 1989 to 1996. If the Gold Fields data on Western disinvestment was correct, it would imply hugely positive Western purchases of physical bullion in this 1989-1996 period. There is no indication of such massive hoarding of physical gold in the texts of the Gold Fields reports over this period. Almost all market participants agree that Western investors have liquidated physical bullion over the last decade. Clearly, supplies from Western disinvestment are underestimated by GFMS over this period.

There is yet more evidence that Western disinvestment of gold bullion was substantial during the years 1989-1996. It is estimated that the cumulative deficit in the silver market was perhaps 800 million ounces during this period. Gold Fields estimates that roughly 50 million ounces of this deficit was met by flows of silver from producer and consumer borrowings. We estimate such flows were perhaps 300 million ounces. In any case, the bulk of this deficit was fed by Western disinvestment.

Silver, Western Disinvestment, CPM Estimates (millions of ounces)								
Year	1989	1990	1991	1992	1993	1994	1995	1996
Ounces	34.6	-9.5	-54.5	-61.9	-161.7	-181.1	-174.6	-204.3

CFTC data suggests that a reduction in long derivative positions by speculators contributed to this flow. However, this accounts for only a portion of the overall flow from above ground stocks after allowance is made for producer and consumer borrowings. Depositories and refineries saw physical silver dishoarding by Western investors. There can be no doubt that there has been substantial liquidation of physical silver bullion by Western investors in the 1990s. It does not seem plausible that, given such physical silver dishoarding, these same investors were hoarding physical gold bullion. ♦

CHAPTER 1 APPENDIX III

SOME REFLECTIONS ON CHINESE GOLD DEMAND DATA

As mentioned in Chapter I, there is something of a mystery regarding Chinese gold demand. In 1993, amidst a bull market in gold, it was widely believed that China was the most recent Far Eastern boom in gold demand. Chinese consumers were reportedly crowding jewelry shops; imports into China were surging; and there were numerous reports of high and rapidly growing Chinese gold demand. These reports included an estimate by the WGC's own representative in China of 350 tonnes of demand in 1992 – a full 100 tonnes above the official WGC estimate of 250 tonnes. In Chapter One we argued that both the low level and negative trend in WGC estimates of Chinese gold demand appear to make little sense. This appendix addresses this issue.

Chinese Gold Demand, WGC (tonnes)							
Year	1992	1993	1994	1995	1996	H1/1996	H2/1997
Tonnes	250.0	223.0	224.3	223.9	207.7	117.4	109.6

The World Gold Council estimate for Chinese demand in recent years has been only slightly above 200 tonnes per annum and has been roughly stable, despite double digit average annual increases in Chinese personal income. In fact, in the first half of this year, when global gold demand rose by a record amount in response to a lower gold price, the World Gold Council estimate of gold demand in China fell significantly, despite a double digit rise in Chinese retail sales overall.

WGC ESTIMATES OF CHINESE GOLD DEMAND

It is noteworthy that the usually conservative Gold Fields Mineral Services, which in other countries consistently estimates jewelry demand below the levels estimated by the WGC, has an estimate for Chinese gold end-use demand that is roughly 70 tonnes per annum above the level estimated by the WGC.

There is yet another fact that places in question the validity of the WGC's estimates of gold demand in China. The current WGC estimate of Chinese gold demand results in a ratio of gold consumption

to income that is unbelievably low for an emerging Asian country. To fully appreciate the significance of this, it is worthwhile to look into cross-country comparisons of gold demand in some depth.

In commodity analysis, the ratio of the value of a commodity to total national income and product is referred to as its “intensity of use.” For most industrial commodities, this ratio tends to be very low in the early stages of economic development. As countries industrialize, this ratio of commodity use to GNP tends to rise. However, at some point a country begins to enter the post industrial phase of economic development. Then, heavy industry gives way in importance to light industry and services and the intensity of use of the commodity begins to fall.

Intensity of use analysis of gold reveals many unusual characteristics:

- 1) The intensity of use of gold tends to be much higher in certain geographical regions – most notably Far East Asia and the Middle East – than it is in the industrialized West.
- 2) Intensity of use tends to be quite high in these regions even when the stage of economic development and, hence, per capita incomes are very low.
- 3) Intensity of gold use tends to rise for many countries as per capita incomes initially rise. Once a certain level of affluence is reached, such gold intensity of use stabilizes and eventually falls slightly. However, this trajectory of overall intensity of use masks large shifts in the mix of gold consumption.

In emerging Far East Asian and Middle East countries, we find that the importance of traditional gold bar hoarding diminishes markedly as per capita incomes rise. However, this fall off in bar hoarding is replaced with a rapidly rising intensity of use of jewelry for adornment purposes. At advanced stages of economic development, this intensity of use of adornment jewelry tends to be far higher in the Far East than in the developed West.

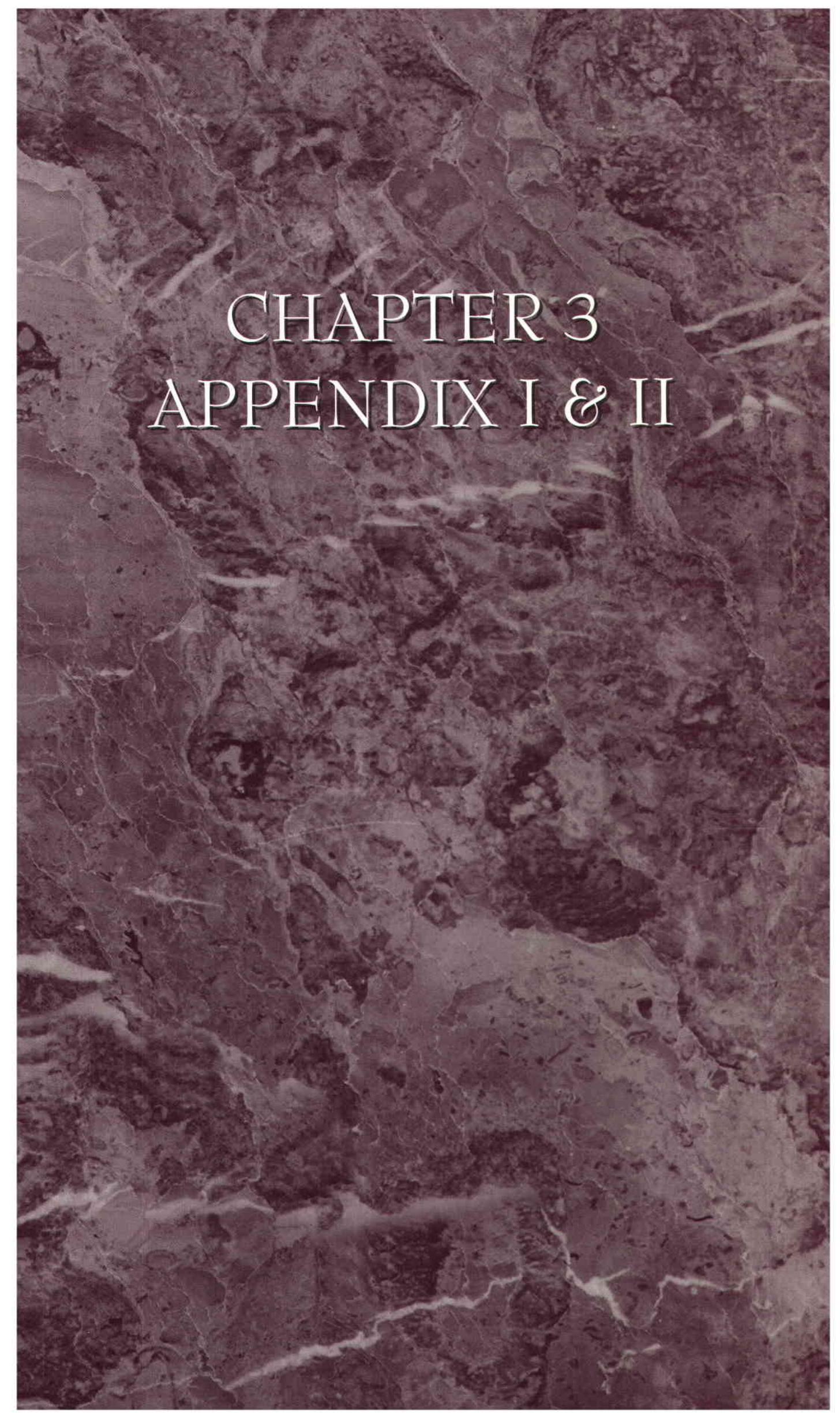
The World Gold Council data on gold demand in China – and for that matter the Gold Fields data as well – looks uncharacteristically low from this intensity of use perspective. On the following page is a table that approximates these intensity of use comparisons by relating gold consumption in tonnes relative to PPP-based estimates of GNP in the principal Far Eastern countries.

Value of Gold Consumption/GNP		
Emerging Economies:		
	1994	1995
China	.092	.079
Hong Kong	.442	.371
India	.436	.450
Indonesia	.174	.199
Malaysia	.183	.200
South Korea	.284	.289
Taiwan	.565	.515
Thailand	.377	.325
Turkey	.347	.504
Advanced Economies:		
Germany	.063	.072
U.S.	.055	.054

Sources: World Gold Council and World Development Report 1996, Taiwan Council for Economic Planning & Development Data Book, 1996.

The above table shows that the WGC estimate of Chinese gold demand implies an intensity of use of gold in the Chinese economy that is perhaps one-fifth or one-sixth of that of India and a fraction of that prevailing in other Far Eastern economies where the Chinese culture predominates. It is also a fraction of the intensity of use that prevailed in these ethnically Chinese countries when their per capita incomes were comparable to those prevailing in China today.

In fact, the WGC data for the most recent years implies an intensity of use that is comparable to that of the U.S. and some other Western cultures. This flies directly in the face of the gold intensity of use comparisons of all other Far Eastern emerging countries relative to their Western counterparts. It also does not square with a plethora of anecdotal evidence about especially intense gold buying by the Chinese over the last decade. ♦



CHAPTER 3
APPENDIX I & II

CHAPTER 3 APPENDIX I

SPECULATIVE FUND ACTIVITY ON THE OTC MARKET

One of the most reliable set of statistics we have in the gold futures and forward market is the Commodity and Future Trading Commission (CFTC) Position of Traders Reports on the Comex where considerable speculative flows occur. In 1993, as a partner at one of the largest hedge funds, I can personally attest to the extraordinary precision of this data. When carrying limit positions on commodities in U.S. futures exchanges through options, I was amazed at the day-to-day surveillance conducted by the CFTC of our precise deltas. We know that the Comex flows are only a part of total speculative flows in the vast worldwide trading of gold futures, forwards, options, and warrants; however, the CFTC Position of Traders Reports provide us with an anchor of sorts regarding the direction and order of magnitude of such speculative flows.

In 1993, a growing awareness of gold's positive commodity fundamentals coupled with a powerful technical signal – a decisive breakout above a six-year downtrend line – set off massive speculative purchases of gold through futures, “over-the-counter” forwards, “over-the-counter” options, and warrant issues.¹ The CFTC data provides us with an accurate measure of a portion of these flows.

From the end of 1992 to the end of 1993, such speculators went from a net short position of 22,500 contracts to a net long position of 73,471 contracts, in effect purchasing over that 12 month period the equivalent of 9,600,000 ounces, or roughly 300 tonnes of gold. This net purchase over a calendar year exceeds anything experienced in prior years in the 1980s, including bull market years such as 1986 and 1987. We know this statistic is highly accurate. We also know it comprised only a small portion of all the Western speculative purchases that occurred over that calendar year. Yet, it exceeds Gold Fields' latest estimate (264 tonnes) of overall Western speculative and investment purchases (which was calculated as a residual) in that year.

¹ Key to the argument of this paper is the assumption that speculator purchases or sales of futures, forwards, options and warrants correspond to investment or disinvestment in physical gold. I understand this is a controversial point; many argue these are only transactions in “paper” and not in “physical” gold and should not be included in supply/demand balances. It is my contention that the entire futures and forward book is arbitrated to the physical market by dealers and that such paper purchases and sales impact the physical market's flows. In any event, Gold Fields must agree with my position since they have included producer forwards and options in their supply/demand balances for many years. Forwards and options, whether they are held by producers or speculators, are the same instrument; once one recognizes producer transactions using these instruments as relevant to supply/demand balances, one must remain consistent and incorporate speculator transactions in these same instruments as well.

How large were overall Western speculative and investor purchases in 1993? Gold Fields provides us with one other hard number: In 1993 there were over 20,000,000 ounces (over 600 tonnes) of warrant issues registered for sale in 1993. Gold Fields estimates that, by the end of 1993, dealers had purchased up to 100 tonnes of gold as a delta hedge against warrants they had sold to investors. Although many of these registered issues were less than fully subscribed and although their year-end delta was certainly much less than one, my understanding of their relative success (subscription rate) and the location of their strikes would suggest a somewhat higher delta; for example, a 50% subscription rate and a delta on the aggregate position of .5 would suggest an overall delta of 160 tonnes by year-end 1993.

Gold Fields suggests that some of the delta hedging of these warrants occurred on Comex, suggesting the Comex data and any delta inferred against warrant issues are not purely additive and to sum them implies a degree of double counting. This assumption is absolutely incorrect; though some delta hedging of warrants by dealers was laid off on the Comex, it would have been recorded as a dealer and not a speculative position, and would not have added to the net speculator position on Comex. This is true as well for any speculative positions on the over-the-counter forward and option markets held by speculators.

Once we go beyond futures and warrants (where we have good data) to the over-the-counter forward and option markets, we have no hard data. From the testimony of most dealers in the U.S. who carry these positions on their books, I was told at the time that, by 1993, the positions of hedge funds in this OTC market were many times the positions on the Comex. In fact, at the time it was rumored that one large fund had an OTC position that was as large as the entire fund position on the Comex. Since virtually every fund was scrambling to get on board the gold bull market that year, the OTC fund position felt like it could have been many, many times the Comex fund position. In addition to these hedge funds, the managed futures funds, who are the traditional Comex participants, were forced into the over-the-counter market in order to exceed fairly restrictive Comex position limits.

Besides the restrictive position limits imposed by the Comex, there are good reasons why the vast majority of fund activity is done on the over-the-counter market. Hedge funds do not have to post margin

against OTC gold forward positions but they do have to post margin for Comex futures trades. Also, the OTC market is far larger and more liquid. And, of course, this refers to funds operating on our side of the Atlantic; in Europe, the Middle East, and Asia, where trading hours only partially overlap Comex trading hours, for these funds a much higher proportion of transactions flow through the over-the-counter forward and option markets rather than the Comex.

Now that the London Bullion Market Association (LBMA) has disclosed over the counter gold trading volumes, there is widespread agreement that over-the-counter speculative positions far exceed those visible on Comex. In 1997, we found a small window on the OTC gold positions held by the managed futures funds that dominate speculative activity on the Comex. In a July 14, 1997, *Wall Street Journal* article an account of the short-term trading profits of a single managed futures fund implied a position of perhaps 200 tonnes.

*“...After a slow start this year, Mr. Henry’s performance boomed this month, benefiting from various trading strategies involving gold, global bonds and the British pound. At the end of last month, Mr. Henry’s largest program, the \$1.2 billion Financial and Metals portfolio, was down 6%. But thanks partially to a bearish position on gold that benefited from the metal’s recent fall, the program is up 7% this year as of last Friday.”*²

Since the last day in June 1997, one of Mr. Henry’s funds with \$1.2 billion had an overall positive swing in net assets of 13% or roughly \$156 billion. Apparently, a large part of this gain was due to a bearish position in gold. Over this brief period, spot gold fell from \$333.70 to \$321.40 – a little more than \$12. As Mr. Henry trades with the trend, he probably added to his position on the break into the July 4th holiday. Let us assume his average gain on gold was a little less than \$12.30 – perhaps \$11 or so. Let us also assume that half of the positive swing in his portfolio was due to his bear trade in gold. Such assumptions would imply an outstanding short position in gold of 7 million ounces or 230 tonnes. This number is only an educated guess of sorts, but it is probably in the ballpark.

Earlier we made the point that the Comex speculator position in gold is only the tip of the iceberg of overall fund positions. This window on fund activity shows us how small this tip of the iceberg might be or, better phrased, how large the overall iceberg of fund positions is rel-

² “Is Futures Giant Getting Too Bulky to Perform?” *Wall Street Journal*, July 14, 1997.

ative to what we see on the Comex. Mr. Henry markets his fund through commission houses; such funds try to do their transactions on the Comex. The position limit on Comex is 750,000 ounces. Mr. Henry's one fund may be short seven million ounces or almost 10 times the Comex position limit. As most hedge funds and proprietary traders do not use the Comex, it is easy to see that the OTC fund position may be as much as 10 times what we see on the Comex.

It is estimated that the total assets of all the managed futures funds who report to the CFTC were on the order of \$25 billion dollars in 1997. These managed futures funds focus entirely on derivative trading; therefore, they utilize huge leverage. In addition to these funds, there are hedge funds and proprietary trading pools at investment and commercial banks. The assets of these latter institutions are much larger. However, hedge funds invest much of their capital in equities; therefore, they leverage their capital through derivatives to a lesser extent than the managed futures funds.

The IMF has estimated that the total assets employed by such institutions in leveraged speculation through derivatives exceeds \$100 billion globally and that these assets are leveraged by five to 10 times.³

The IMF is a conservative institution; it would not make such estimates if it did not have some evidence on which to base its estimates. Such estimates made by conservative institutions almost always suffer from significant errors of omission. Since hedge funds often operate from offshore centers and seek secrecy, the opportunity for a significant error of omission is great.

One leading dealer who specializes in gold derivatives to the hedge fund community estimates that the total assets of the hedge funds alone are several hundreds of billions of dollars. To this total we must add assets employed by proprietary trading accounts at commercial and investment banks. Dealer reports such as this one indicate this IMF estimate may be very conservative.

It is not unreasonable to assume that the total assets of all such leveraged funds may be on the order of \$200 billion with leveraged positions in the \$1 to \$2 trillion range. If the net position in gold derivatives at any one time is only 1% of their total portfolio, these funds taken in the aggregate would hold a short or long position in gold of almost 1,000 to 2,000 tonnes. ♦

³ David Hale, Zurich Kemper, December 1997.

CHAPTER 3 APPENDIX II

UNREPORTED FLOWS OF OFFICIAL GOLD IN 1996

Bank of England disclosures on the volume of gold borrowings in 1994 and 1995 make us confident that Gold Fields Mineral Services understated global gold demand and the gold market deficit in those two years.

We must ask, if it is plausible that the systematic understatement of global demand and the market deficit that seems so compelling in the prior years continued into 1996 and 1997. As regards 1996, we make the following points:

Gold Fields Mineral Services (GFMS) assumed that producer hedging contracted by 19 tonnes in 1996. They estimate that the delta hedging against options was 99 tonnes in that same year. We presume that part, not all, of this was attributed to producer option transactions. The Canadian brokerage firm, Scotia McCleod, does a North American hedge survey. They combine their survey with similar hedge surveys of the Australian producers done by Australian brokerage houses and hedging reports from the South African mining houses. These surveys indicate total producer hedging including options of roughly 170 tonnes in 1996. This implies a higher producer related flow of borrowed gold of not quite 100 tonnes.

GFMS apparently underestimated central bank selling. Argentina has reported that it bought 124 tonnes of puts in 1996. At year end 1996 these puts had a delta hedge of 50% or 62 tonnes. This sale was probably not included in the GFMS estimate of the delta against options.

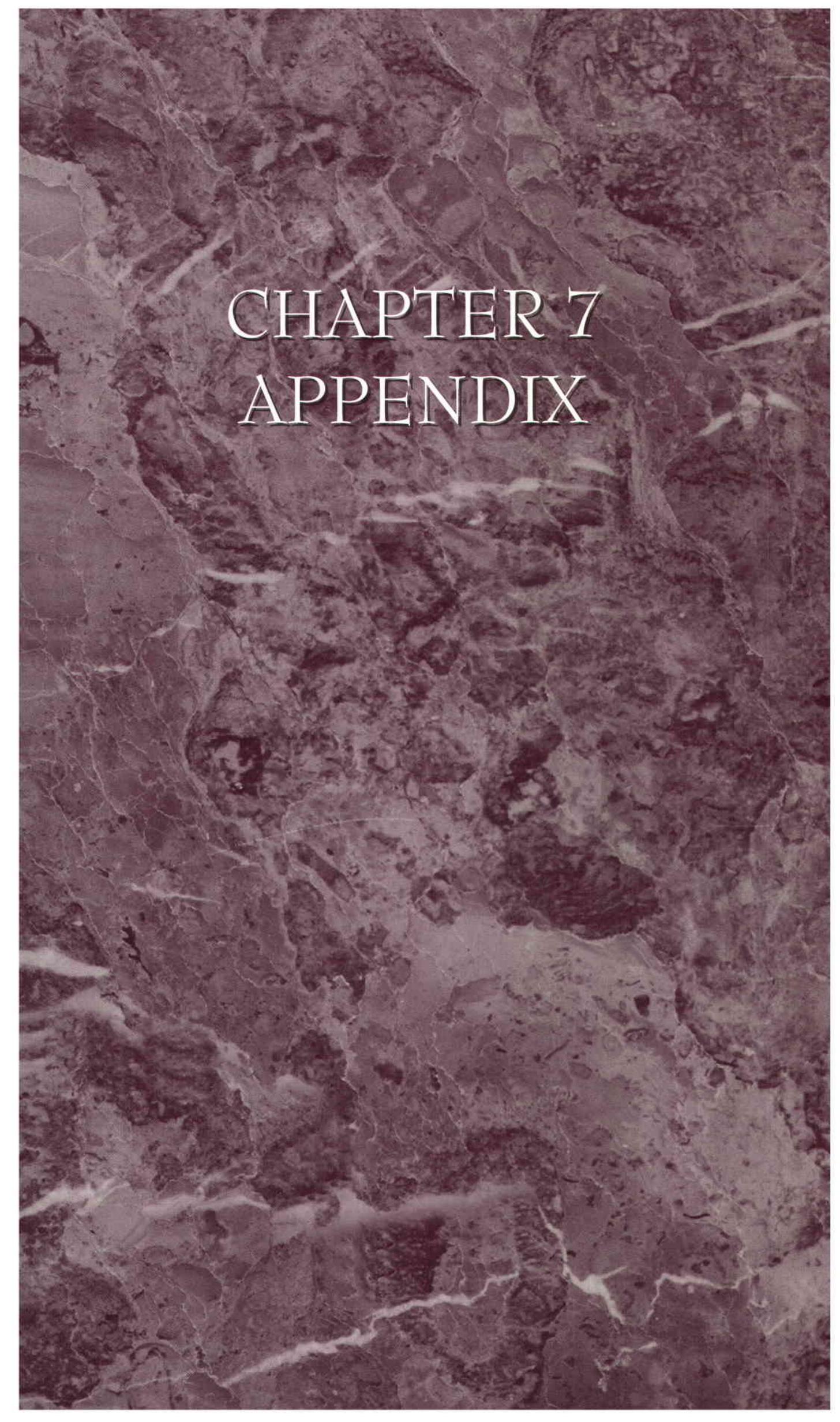
GFMS claims that 350 tonnes of gold was bought by 19 central banks that reduced gross official sales of 600 tonnes to a net sale of 250 tonnes. Most of these official purchases have not been reported but are conjecture. In our opinion, GFMS' estimates may overstate official purchases. In addition, the alleged increase in official reserves in Russia may have reflected in part a transfer of gold from the State Bureau to the Central Bank. Some of the alleged Far Eastern official purchases may have been transitory trading positions (Malaysia and Singapore) or purchases for domestic fabricators (China).

GFMS has Western disinvestment of 163 tonnes for all of 1996. They estimated Western disinvestment at that level at mid-year 1996. This

implies no increase in the second half. Everyone in the marketplace knows there was considerable hedge fund selling in the second half of 1996. Many dealers estimate the increase in this short position was on the order of many hundreds of tonnes in the second half 1996. Even GFMS makes a reference to substantial fund selling in the second half of 1996 in their annual gold review.

Gold Fields Mineral Services has no line items for gold borrowings by fabricators and by bullion dealers for general corporate purposes. Both are substantial and have been in significant uptrends. The growing conviction in the gold market that EMU-related central bank selling would cap gold prices probably reduced perceptions of risk associated with gold borrowings by such bullion dealers. Fabricators probably did not increase their borrowings by much for this reason, since these borrowings are related to their gold inventories which probably did not rise in 1996. However, bullion bankers may have been very encouraged by this reduced perception of risk to add to their bullion borrowings to finance general corporate purposes.

Overall, it does not take much investigation to find the additional flows of gold from above ground stocks to meet a level of global demand and market deficit that is 400 tonnes or more than Gold Fields' estimates. ♦



CHAPTER 7
APPENDIX

The following appendix is a study on Asia written and issued to the clients of Veneroso Associates in January of this year. It is reproduced as it was issued then.

CHAPTER 7 APPENDIX

A LONG RUN PERSPECTIVE ON ASIA

Was the Asian Miracle a Mirage?

Six months ago, emerging Asia was a well-established growth story. Today, it is alleged that Asia is a can of worms. Its firms and financial institutions are hopelessly overindebted and bankrupt. The Asian way, with its government intervention and strategic alliances, has been shown to be a failure relative to the ascendant unfettered free market capitalism of the West. Asian cooperation is corruption and cronyism. The Asian way leads to inefficient investment and overinvestment. Asia will lag until she opens her markets to global capital flows and foreign investment, until government withdraws, until corporate alliances are abandoned, until free markets rule. Based on this newly ascendant view, Asia will lag the West until the long needed reforms are made.

Let us hear from Steve Hanke, noted advocate of laissez faire capitalism and the most rigid of all exchange rate regimes – the monetary board. For Hanke, the disaster in Korea is due to one major overriding cause – government intervention. And an IMF bailout represents only more intervention which will simply make matters worse eventually.

Six months ago, emerging Asia was a well-established growth story. Today, it is alleged that its firms and financial institutions are hopelessly overindebted; its policies of government intervention and strategic alliances are failures.

Based on this newly ascendant view, Asia will lag the West until the long-needed reforms are made.

IT AIN'T OVER YET

From an interview with Steve Hanke, Forbes, December 29, 1997

HANKE: The IMF is set up to deal with liquidity crises. This is not a liquidity crisis. It is a solvency crisis. A lot of the money borrowed by the Thais and the South Koreans went into bad investment – luxury apartments with no tenants, unprofitable semi-conductor and car plants.

FORBES: Is it worse than Mexico in 1994?

Yes. It's certainly on a much bigger scale. The tab for cleaning up Thai bank insolvencies alone will be at least 15% of GD – proportionately five times more than the cost of cleaning up the U.S. S & L mess. And since a lot of the foreign money that flowed into Korea and Thailand has created industrial over capacity, that excess capacity is going to weigh heavily on world markets for years.

FORBES: Some say it is an example of free enterprise gone berserk; that we need more regulation.

HANKE: No. These economies were government directed. More regulation by government isn't a proper solution. Government is the problem...

FORBES: So why shouldn't we be grateful to the IMF?

HANKE: ...By bailing out the governments and the bankers who made the mistakes, the IMF is setting things up for the next even bigger crisis....

For Steve Hanke, these economies were government directed. More regulation by government isn't a proper solution. Government is the problem.

For Woo-Cumings, the Korean system has always been intrinsically unstable.

In the course of Korean development, the state created an impressive constellation of mammoth industrial firms, the chaebol.

In turn these firms provided political support for the ruling party, in the form of floodtides of cash passing between the industrialists and the politicians.

The big firms were always hugely leveraged and always needed periodic infusions of cash.

Korea has a highly-leveraged, highly political, manifestly corrupt nexus between the state and big business. Since they have been unable to reckon with this themselves, they now rest their fate with the IMF.

Here is another account from Meredith Woo-Cumings, Professor of Political Science, Northwestern University. For Woo-Cumings the Korean development state is essentially corrupt and obsolete. However, this analyst concedes that somehow this development state was the basis for Korea's extraordinary success. Unfortunately, in her view, this regime may not be easily dismantled.

...The Korean economic system has always been intrinsically unstable, and therefore vulnerable to exactly the sort of financial calamity that has now befallen it. The only interesting question was when the other shoe was going to drop, revealing the instability of an obsolescent and increasingly corrupt system.

...In the course of this development, the state created an impressive constellation of mammoth industrial firms, the chaebol, a group of can-do oligopolies with plenty of entrepreneurial spirit, great firms like Hyundai and Samsung that founded one new industry after another. In turn these firms provided political support for the ruling party, in the form of floodtides of cash passing between the industrialists and the politicians. For the chaebols this was their best insurance against default, since the state was always behind them. Additional insurance came from their sheer size and therefore their importance to the domestic economy; they were so big that they could be in what we political scientists call a "state of permanent receivership." The big firms were always hugely leveraged, with very high debt-equity ratios, and because they usually had lower profit rates than small-sized firms, they always needed periodic infusions of new cash.

What will the IMF... do for the Korean political economy?

The first and most important measure is financial liberalization. The IMF is already reported to have asked for a complete liberalization of the financial sector, making it possible, among other things, for a much higher degree of transparency and for foreign takeovers of Korean banks and other financial intermediaries. Maybe they will be successful, and maybe not, but from the historical perspective I outlined above, I will believe it only when I see it. In any case I believe that true reform here will be harder than anywhere else, because it challenges the very basis of Korean economic success since the 1960s.

...the Korean political economy is another kind of leftover cold War artifact, good for an era of security threats and close bilateral relations with Washington, but of questionable use in the global "world without borders" of the 1990s. At some point Koreans have to reckon with a highly-leveraged, highly political, manifestly corrupt nexus between the state and big business, one that nonetheless had propelled the Korean economy forward at world-beating rates of growth. Since they have been unable to reckon with this juggernaut themselves, they now rest their fate with the IMF.

Meredith Woo-Cumings, remarks to the Economic Strategy Institute, Dec. 2, 1997

ASIA'S PROBLEM IS ABOVE ALL A RUN BY WESTERN SHORT-TERM CAPITAL¹

With Asia's currency crisis, all of Asia's critics focus solely on the region's financial instability and its corruption and not on its all important real sector economic variables. In our opinion this is rubbish. The Asian currency crisis is above all a "run" by today's excessively volatile trend-following markets. Prior to the recent currency crisis, by most macroeconomic measures, emerging Asia stood up well. Savings rates were sky high. Educational levels were rising rapidly – that is, there was rapid human capital deepening. Fiscal accounts were balanced. Inflation was low. And these countries had developed great export machines. Yes, a few of the smaller countries in the region ran current account deficits. But the region as a whole is the world's great current account surplus bloc. Japan's current account surplus, at 3% of Gross Domestic Product (GDP), is the largest in the world. China's surplus is 1.4% of GDP, Singapore's is 14% of GDP, and Taiwan's is 4% of GDP. The region has the largest international reserves at \$750 billion. Consistently, the region has had the highest productivity and economic growth rates. Because of this high productivity and economic growth, when Asia's tigers ran current account deficits it did not matter; these rapidly growing Asian economies could outgrow the increments to external debt created by current account deficits which slower growing economies in Latin America, Africa and the Middle East could not. Current account deficits of 4%-5% of GDP, such as Korea's was last year, were part of their equilibrium growth path.

Asia's one vulnerability is debt. But Asia's high ratios of domestic – not foreign – bank intermediation is an inescapable consequence of two of its widely praised attributes: High savings rates and a fairly equal distribution of income. Asia has the highest savings rates in the world. It has a more equal distribution of income than other parts of the emerging world. Asia's "average man" saves. He is risk averse. He puts his saved income on deposit. These characteristics of Asia's savings behavior require a deep structure of bank deposits to GDP. The Asian governments tend to borrow less than Western governments. Thrifty households in Asia do not borrow for consumption as their

By most macroeconomic measures emerging Asia had stood up well. Savings rates were sky high. Educational levels were rising rapidly. Fiscal accounts were balanced. Inflation was low. And these countries had developed great export machines.

The region as a whole is the world's great current account surplus bloc. When Asia's tigers ran current account deficits it did not matter; as they could outgrow the increments to external debt created by current account deficits.

But Asia's high ratios of domestic – bank intermediation are an inescapable consequence of two of its widely praised attributes: Very high savings rates and a fairly equal distribution of income. Asia's "average man" is risk averse; he saves via bank deposits. This requires high ratios of bank deposits and loans to GDP.

¹ In what follows, we refer to "Asia" and "the Asian model" of development. In fact, we are dealing with many countries which differ in important ways. The Asian model of alliance capitalism is embodied first and foremost by Japan. Korea, Taiwan and Singapore are variants of this basic model. Thailand and Malaysia are more removed, with Japanese foreign direct investment introducing development state features into economies that are structured more along neoclassical market lines. The Philippines and Indonesia are one step further removed from the Japanese model. In fact we should probably not include Indonesia as a variant of this model; it more resembles an internal colonialist regime than an example of Asia's alliance capitalism.

High levels of indebtedness imply a fragile financial structure. Under laissez faire capitalism, external shocks quickly propagate financial crises as the efforts by all parties to pursue their own self interest result in liquidations by creditors and subsequent "runs" on banks. The Asian culture of cooperation fosters government intervention and private alliances that allow for such high levels of debt.

Western critics will argue that high savings rates can be transferred through equity markets, thereby avoiding the financial fragility associated with deep debt intermediation. This is simply not a realistic alternative. Savings transferred through equity issues never exceed a few percent of GDP. A flow of this magnitude counts for almost nothing in an Asian economy where household savings can be 20% of GDP.

Western counterparts do. Therefore, huge savings in the banking system must go to productive investment. Asian thrift and income equality mandate high levels of indebtedness. High levels of indebtedness imply a fragile financial structure. Under laissez faire capitalism, external shocks quickly propagate financial crises as the efforts by all parties to pursue their own self interest result in liquidation by creditors and subsequent runs on banks. The Asian culture of cooperation fosters government intervention and private alliances that allow for such high levels of debt.

At the risk of accusations of racism, it appears that cooperative behavior that supports high structures of debt intermediation are rooted in Asian cultures. In 1973 I was invited by Millard Long of Harvard to contribute to a World Bank agricultural policy paper. At the time, it was a priority of the Bank to promote transfers of resources to small farmers to improve income distributions and global agricultural output. The instrument at hand to achieve this end was agricultural credit. There was one hitch: Virtually all of these institutions eventually went bust. The variability of weather eventually generated crop failures; living at subsistence levels, small farmers invariably defaulted when the inevitable crop failure occurred. Because agricultural credit institutions would not move against small farmers because they were poor and because so many farmers failed at once, such small farmer debt defaults resulted in a permanent condition of institutional insolvency. There was one notable exception: Agricultural credit cooperatives in East Asia. In these instances, savings were effectively mobilized and exogenous weather shocks did not generate mass debt default. We scoured the globe for similar instances. One was found in Brazil – in the rural Japanese immigrant community – not elsewhere in Brazil, or elsewhere in Latin America. But only in the East Asian culture of the Japanese rural population.

Western critics of the Asian model of development will argue that high savings rates can be transferred through equity markets, thereby avoiding the financial fragility associated with deep structures of debt intermediation. This is simply not a realistic alternative. Throughout the history of U.S. financial markets the net transfer of funds through equity issues has averaged a mere 1% of GDP or less. In fact, over the last decade, this net equity fund flow has been negative, with firms buying back stock at a rate that has exceeded new issues. The same meager fund flow through equity channels of finance is found everywhere. If one excludes direct foreign investment and private transfers of equity funds (usually within corporate "groups"), savings trans-

ferred through equity issues never exceed a few percent of GDP. A flow of this magnitude may be significant in the U.S. economy where household savings are 3% of GDP, but they count for almost nothing in an Asian economy where household savings can be 20% of GDP.

What is not widely recognized is that, in economies where savings rates are high but debt/equity ratios are not, equity finance is generated by high rates of retained profits. Such a dominant regime of “internal finance” occurs in some emerging economies but it is less common in today’s industrialized nations. When it occurs it is associated with extremely skewed distributions of income and wealth, since wealth accumulation is concentrated among corporate owners who earn extremely high profit rates. Such regimes of internal finance are inefficient from a welfare perspective. Though they are financially stable, they are “blind.” Savings are retained within the corporation; they are not transferred through a discriminating market that pits project against project and allocates resources to the users with the highest returns. In the regime of internal finance, savings are confined to established entrepreneurs who have saturated their markets with fixed capital and have extremely limited opportunity horizons beyond these markets. Regimes of internal finance spawn investment with low social returns, though frequently monopoly market positions, protectionism, and the like generate high financial returns. Such regimes are certainly not able to achieve the quantum advances in technology, scale, global competitiveness and market dominance that have been the hallmark of the Asian development state.

Asia’s Achilles’ heel was exposing itself to volatile foreign capital.²

BEHIND KOREA’S PLUNGE

Excerpts from a New York Times article, November 27, 1997

Alice H. Amsden and Yoon-Dae Euh

...When the government controlled the financial markets in the 1970s and 1980s, Korea’s growth was stupendous. Not until the early 1990s, when financial markets were deregulated, did the economy sink.

Where savings rates are high but debt/equity ratios are not, equity finance is generated by high rates of retained profits.

Such regimes of internal finance are “blind.” Savings are confined to established entrepreneurs who have limited opportunity horizons. Regimes of internal finance are not able to achieve the quantum advances in technology, scale, global competitiveness that have been the hallmark of the Asian development state.

Asia’s Achilles’ heel was exposing itself to volatile foreign capital.

² The following discussion focuses on outflows of short-term bank credit and portfolio capital. It applies most to Korea. It applies to a lesser degree to Thailand and Malaysia. There are other aspects to these regional Asian crises. In some countries domestic capital flight is no doubt a contributing factor. The depreciation of the Indonesian rupiah has been much greater than that of the won or baht, even though Indonesia has a lower current account deficit and possibly less exposure to foreign debt. In cases like this, such other factors may be very important.

Indeed, it was the Government's decision to allow banks and other financial institutions to borrow and lend without interference that created the current crisis.

...In 1995, South Korea made a Faustian bargain with the United States. In exchange for membership in the prestigious Organization for Economic Cooperation and Development, it agreed to loosen almost all controls on financial institutions, both international and domestic.

...Foreign banks were no longer barred from buying and selling large amounts of foreign currency; that enabled them to speculate against the Korean currency, the won.

...South Korea also didn't monitor its own banks as they ventured farther afield. Merchant banks, which can engage in most financial transactions, lent recklessly.

...The Government's looser restriction on manufacturing companies were also harmful. Companies became free to take out loans from foreign banks – and many of them overindulged.

...These bad loans helped create a crisis for South Korea's entire commercial banking system. Not only were companies unable to pay back their foreign loans, but they couldn't pay back their old loans to South Korea's commercial banks, either. When word got around that some financial institutions were failing, there was an old-fashioned run on the banks. Businesses and individuals withdrew their money, and banks were forced to call in their loans to companies that were highly leveraged but profitable. These companies were innocent victims; because of the panic, they went bankrupt.

...But the crisis also shows that the United States, acting out of self-interest, was wrong to push the South Korean Government to open up its financial system so quickly. The Government and its financial institutions didn't have time to develop adequate ways to control and monitor this brave new world.

(Alice H. Amsden is professor of political economy at MIT. Yoon-Dae Euh, a professor of International finance at Korea University, is a former member of the South Korean Monetary Board.)

In 1995, South Korea made a Faustian bargain with the United States. In exchange for membership in the OECD, it agreed to loosen controls on financial institutions.

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Jeffrey Sachs of Harvard makes the same point. At mid-year the International Monetary Fund (IMF) praised Korea and Thailand for their sound macroeconomics fundamentals. They were correct. The crisis has arisen from a run by excessively mobile international capital.

Jeffrey Sachs of Harvard makes the same point.

POWER UNTO ITSELF

The head of the Harvard Institute for International Development explains why the IMF needs reassessment.

...Consider what the fund said about Korea just three months ago in its 1997 annual report. "Directors welcomed Korea's continued impressive macroeconomic performance (and) praised the authorities for their enviable fiscal record." Three months ago there was not a hint of alarm, only a call for further financial sector reform – incidentally without mentioning the chaebol (conglomerates), or the issues of foreign ownership of banks, or banking supervision that now figure so predominantly in the IMF's Korea programme.

In the same report, the IMF had this to say about Thailand, at that moment on the edge of the financial abyss. "Directors strongly praised Thailand's remarkable economic performance and the authorities consistent record of sound macroeconomic policies."

With a straight face, Michel Candessus, the IMF managing director, now blames Asian governments for the deep failures of macroeconomic and financial policies that the IMF has discovered. It would have been more useful instead, for the IMF to ponder why the situation looked so much better three months ago, for therein lies a basic truth about the situation in Asia.

There is no "fundamental" reason for Asia's financial calamity except financial panic itself. Asia's need for significant financial sector reform is real, but not a sufficient cause for the panic, and not a justification for harsh macroeconomic policy adjustments. Asia's fundamentals are adequate to forestall an economic contraction: Budgets are in balance or surplus, inflation is low, private saving rates are high, economies are poised for export growth.

Asia is reeling not from a crisis of fundamentals but a self-fulfilling withdrawal of short-term loans, one that is fueled by each investor's recognition that all other investors are withdrawing their claims. Since short-term debts exceed foreign exchange reserves, it is "rational" for each investor to join is the panic.

Jeffrey Sachs, Financial Times, Dec. 12, 1997.

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Stiglitz makes the same points.

Joseph Stiglitz, former Yale sage and head of the President's Council of Economic advisors, and now chief economist at the World Bank, makes the same points, both before his recent trip to Asia and now on his return.

HOW TO FIX THE ASIAN ECONOMIES,
NEW YORK TIMES, OCT. 31, 1997

East Asia's amazing economic transformation has been real.

As East Asia's financial turmoil continues to unfold, pundits have been quick to pronounce the end of the region's economic "miracle." Some have even declared that there never was a miracle, only a mirage.

Nothing could be further from the truth. East Asia's amazing economic transformation in the last few decades has been real. The current problems, however, require immediate attention to insure the continued advancement of the East Asian – and global – economies.

For the last 25 years East Asian economies have grown more than twice as fast as the average rate for the rest of the world. Hong Kong now has a higher per capita income than France, Germany or the United Kingdom. Malaysia and Thailand have virtually eliminated absolute poverty (defined as people living on less than a dollar a day), and in Indonesia the poverty rate dropped to 11 percent in 1995, from 64 percent in 1975.

These successes have been fostered by sound fiscal policies, low inflation, export-driven growth and *effective institutions*, which in turn helped make East Asia the world's leading recipient of foreign investment. Moreover, the region's high savings rate, more than one-third of gross domestic product, is six times foreign investment. These savings have made possible a high and increasing level of investment, *most of which has been put to good use in areas like education and training.*

Recent developments underscore the challenges presented by a world of mobile capital, even for countries with strong fundamentals.

Recent developments, however, underscore the challenges presented by a world of mobile capital – even for countries with strong economic fundamentals. The rapid growth and large influx of private investment created economic strain.

Inadequate oversight, not over-regulation, caused these problems. Consequently, our emphasis should not be on deregulation, but on finding the right regulatory regime.

In addition heavy foreign investment combined with weak financial regulation allowed lenders in many southeast Asian countries to rapidly expand credit, often to risky borrowers, making the financial system more vulnerable.

Inadequate oversight, not over-regulation, caused these problems. Consequently, our emphasis should not be on deregulation, but on finding the right regulatory regime to reestablish stability and confidence.

Policies should encourage stable long-term capital flows while discouraging rapid rounds trips of short-term money.

Asia's experience shows that a sound legal structure, effective monitoring of financial activities and healthy competition are also preconditions for efficient and resilient financial systems. A determination to build these institutions, together with external policies that encourage stable long-term capital flows – particularly of foreign direct investment – *while discouraging rapid round trips of short-term money* will go a long way toward allowing any economy to enjoy the benefits of international capital while avoiding the instability that it can engender.

There are two important issues at hand. First, is there some aspect of the current Asian context that made short-term capital extremely volatile? Second, in general do free movements of international capital now have a greater propensity to destabilize markets and economies than in the past?

There is one noteworthy special financial feature of the current Asian context that clearly exacerbated the crisis. Greedy foreign lenders lent to Asia's highly indebted firms because they did not want to miss a party. Based on their Western prudential limits and guidelines, they should never have lent to Korean firms who were leveraged four to one, but they did. When the environment soured, they looked at these companies for the first time in terms of their prudential limits and guidelines and decided that they wanted out. This is in contrast to other debt crises in the emerging world. When banks lent to Brazilian or Argentine firms in the 1970s, for example, these firms had conservative balance sheets. When balance of payment crises occurred, the banks were able to justify their loans on the basis of *corporate* credit worthiness criteria even if country credit worthiness criteria were not met, and they rolled over their loans. In turn, these highly indebted Asian firms, who were more imperiled by the impact of currency devaluation on their external debts, desperately tried to hedge the foreign exchange risk associated with external borrowings.

Of greater importance is the issue of whether free movements of international capital now have a greater propensity to destabilize markets and economies in the past. This position is implicit in these views of Alice Amsden, Yoon-Dae Euh, Jeffrey Sachs and Joseph Stiglitz. This concern extends far beyond these analysts. Many are astonished at the speed of contagion and the disastrous consequences of the "run" on these Asian countries where their macroeconomic performance a mere year ago had international capital aggressively seeking entry. Such concerns are found in the marketplace. George Soros, who participated in the initial hedge fund assault on the Thai baht, is apparently shocked at how "what started out as a minor imbalance has become a much bigger one that threatens to engulf not only international credit but also international trade," threatening "worldwide deflation." These concerns are found as well in academia where interest is rising in James Tobin's proposal for a transactions tax to reduce the volatility of capital movements. In 1989, Paul Krugman argued that "belief in the efficiency of the foreign exchange market is a matter of pure faith; there is not a shred of positive evidence that the market is efficient." ³

At issue here is whether free movements of international capital now have a greater propensity to destabilize markets and economies than in the past.

³ Robert Wade, *Governing the Market*, Princeton University Press, 1990.

To an increasing degree international mobile capital is interested in short-term trends, not long run prospective returns based on economic fundamentals. It is trend following. It seeks to ride perturbations generated by market misconceptions and the emotions of market participants. However, fundamentally unjustified they may be.

We have no doubt that, to an increasing degree and for many complex reasons, international mobile capital is driven by American “short-term-ism.” Unlike direct investment, it is interested in short-term trends, not long run prospective returns based on economic fundamentals. In essence it is trend following. It seeks to ride perturbations generated by market misconceptions and the emotions of market participants. It posits extrapolative, not forward looking rational, expectations by market participants and employs technical analyses to identify and follow short-term price patterns, however fundamentally unjustified they may be. The motivation for such short-term portfolio behavior is found repeatedly in George Soros’ “The Alchemy of Finance.” For Soros, market participants operate on very imperfect knowledge. Their thinking always is biased. Bluntly, they are usually wrong about the fundamentals. The market’s bias can create trends. These trends can reinforce the market’s bias and even change the fundamentals in a way which supports the trend. There is no equilibrium to which markets gravitate. Investment success is based upon “riding” such trends even if they are not rooted in “fundamentals.” There is nothing new about such trend reinforcing speculative behavior. The economic literature is replete with disputes over whether speculation is stabilizing or destabilizing because, in fact, it can be both. Keynes, both a great economist and a great speculator, likened the stock market to a beauty contest and in doing so opined that destabilizing speculation ruled the roost.

We should not be surprised that in a modern world of instant access to information with relevance for the short run and ever declining transaction costs, mobile international capital has become more destabilizing than it has been in the past.

MAHATHIR: RUNNING ASIA FOR ASIANS THE ASIAN WAY

Asia understands well its problem. Hashimoto has stated that the Asian currency crisis is not a problem of fundamentals but one of confidence. China has echoed his assessment. We have just seen a truly remarkable event which has gotten little attention from the Western press: An impromptu Head of State conference on the Asian currency crisis that has been convened in Malaysia. This meeting was held in the country of Mahathir Mohamad, the Prime Minister of Malaysia, who has been the region’s most outspoken advocate of running Asia for Asians the Asian way. Hashimoto attended and responded immediately to ASEAN’S call for support; he returned to Japan and immediately reversed his position of fiscal austerity, calling for a tax cut without consulting the LDP and the MOF. The *political* head of China attended, not the Finance Minister, not Zhu Rhongji, but

Asia understands well its problem. Hashimoto has stated that the Asian currency crisis is not a problem of fundamentals but one of confidence.

Chinese President Jiang Zemin. At this conference China negotiated a loan to Indonesia, possibly outside the IMF package. Mahathir has been calling for a regional balance of payments finance facility to displace the IMF. Hashimoto, holding to his ties to the West, has insisted on working through the IMF. China is giving the IMF its try, but China would not exclude the possibility of an Asian regional finance facility outside the IMF.

KUALA LUMPUR, Dec 15 (Reuters) – “China is very concerned about the financial turbulence that has swept Southeast Asian countries,” Chinese Foreign Ministry spokesman Shen Guofang said.

...He said China had participated in financial rescue packages led by the International Monetary Fund (IMF), “and has provided assistance to the relevant countries within our own capacity.”

...“China is prepared to take part in discussions about the establishment of a financial cooperation mechanism. China will make its own contribution to promote the regional financial cooperation endeavor,” Shen said without elaboration.

Malaysia’s Prime Minister Mahathir Mohamad has advocated a plan to establish a standby fund independent of the IMF and its austerity programmes.

...Japan’s Prime Minister Ryutaro Hashimoto had already said any support for Asian nations must be within the IMF framework.

Finance ministers from ASEAN (Association of Southeast Asian Nations) and six other nations also agreed earlier this month to provide ad hoc aid to embattled regional economies in conjunction with the IMF in order not to undercut the IMF and the region’s desire to take strong corrective action.

...Asked about the effectiveness of IMF-led rescue packages in Asia so far, totaling more than \$100 billion for Thailand, Indonesia and South Korea, Shen said it was still too early to say.

...“We still need to wait and see whether or not the recipe worked out by the IMF works. The IMF recipe *is one of the ways to overcome the difficulties that are experienced by some of the Asian countries.*

...“There are also other ways and the parties concerned are exploring all the other approaches,” he said. Adding that this would be discussed during the summit.

...He said that *while some IMF conditions were mutually acceptable between the organization and the recipient nation, China’s view is that conditions that are too harsh would not be helpful.*

Mahathir has been calling for a regional balance of payments finance facility to displace the IMF. China is giving the IMF its try, but would not exclude this alternative.

Chinese Foreign Ministry spokesman Shen Guofang said, “The IMF recipe is one of the ways to overcome the difficulties that are experienced by some of the Asian countries. There are also other ways. While some IMF conditions are mutually acceptable China’s view is that conditions that are too harsh will not be helpful.”

ASIA'S TRADE SURPLUS WILL MOVE SO FAST AND SO FAR IT WILL MAKE YOUR HEAD SPIN

The depreciation of the Asian currencies has gone much too far. By November Korea had a current account balance.

Given the lags in trade, that reflected Q397 economic growth of 6.4% and a won exchange rate of 900. The won is now at 1,600.

Korea's trade account will move fast and far into surplus early next year. The same will happen across Asia.

The depreciation of the Asian currencies has gone much too far. Korea had a 4%-5% current account deficit in 1996 at 800 won to the dollar. By December of 1997, Korea ran a giant current account surplus of \$3.68 billion. For reasons we do not understand, the Korean current account surplus exceeded the trade surplus, whereas usually the Korean trade surplus would exceed the current account surplus. Looking at the December data, it seems to us that Korean trade had improved to the point where a current account surplus of about \$2 billion a month had been reached. *Annualized*, this surplus is equal to 5% of Korean GDP calculated at the 1996 exchange rate of 800 won to the dollar. This surplus is equal to 10% of GDP if GDP is calculated at the current exchange rate of 1,600 won to the dollar. Some of this improved trade deficit is non-recurring; for example, inventories are being liquidated into foreign markets. However, the lags in trade are long; there will be new exports and substitutions of imports that will widen the Korean current account surplus over time. In addition, Koreans, provoked by this crisis, may move to buy Korean goods and services. Western programming is being taken off the air. Foreign travel and expenditures are being severely restricted.⁴ Korea's trade accounts will move so fast and so far into surplus in early 1998 it will make your head spin.

The same will happen all across Asia. Thailand went from a monthly peak current account deficit of 9% of GDP to a surplus by September and has had a steadily growing surplus through year-end. Thais are being exhorted to "buy Thai." Malaysia is also reporting current account surpluses. Mahathir is urging a "buy Asian" policy across Asia. We are dealing here with collectivist Asians, not Hobbesian Westerners or Latin Americans. Again, the swing in the region's current accounts will make your head spin.

In the end, the U.S. will experience an offsetting deterioration in its trade. Brazil is absorbing some of Asia's trade improvements now. The Brazilian peg will probably become undone. Latin America will follow

⁴ Korea was moving toward curbing expenditures on luxury imported goods early in 1997 – well before the outbreak of the Asian currency crisis. "Seoul Challenged to Disown Imports Attack", *Financial Times*, 12 March, 1997, p.8. "Senior figures in the Korean government, the U.S. and the European Union, allegedly, have been whipping up popular feeling against imports of luxury goods in order to reduce Korea's (quite small) current account deficit. The U.S. representative at the WTO's council on goods warned Seoul to "issue an unequivocal public assurance that anti-import behavior is inconsistent with Korea's international trade policy objectives." An EU representative warned, "A clear public statement from the Korean government disowning all anti-import aspects of the civil 'frugality' campaign is now necessary to dispel doubts about Korea's commitment to respect in full its WTO obligations." The Korean government replied that it has no involvement in the campaign, which is being run by civic groups. Imagine the degree to which such curbs will go amidst the current crisis and the rise in anti-Western sentiment.

suit, devaluing against the dollar. Europe will absorb less of its share of the coming shift in global current accounts because Europe is a protectionist bloc. The markets assume that trade improvements in the emerging Southeast Asian countries will come mostly at the expense of Japanese trade because the greatest share of their trade is with Japan. Wrong. By way of regional production hierarchies, all of Asia is one export platform to the rest of the world. The high level of intra-regional trade supports the region's overall trade balance. Many believe it will come at the expense of China. Wrong again. China's economy has the highest rate of growth of productivity in tradeables of any economy in the world. Its domestic inflation is now down to U.S. levels. At a constant rimimbi/dollar exchange rate, Chinese competitiveness increases by leaps and bounds against the U.S. With their depreciated currencies East Asian countries will take export business away from China, but it will come in part from the increment to exports it otherwise would have realized.

The swing in Asian trade balances toward greater surplus will come to a great degree at the expense of U.S. trade. The dollar is incredibly vulnerable long-term. For two and a half decades the dollar has eroded amidst repeated balance of payments crises. This time conditions are worse. We started this last dollar rally with a current account deficit to GDP ratio that was higher than it was prior to the dollar bubble of 1984-1985. We are now looking forward to an all-time record U.S. current account deficit relative to GDP.⁵ But in the past, in the case of each dollar crisis, the U.S. was a net creditor nation. This time it is a net debtor nation to the tune of 10%-12% of GDP.

Over the long run, trends in real exchange rates are a function of current account equilibria and productivity differentials. The U.S. is the closest of all the countries in the world to the global technological frontier. Asia is still at a distance and has the rapid human capital deepening to advance on this frontier at a fast pace. On a trend basis, Asian productivity will continue to outstrip that of the U.S. From an external balance point of view, the U.S. is the profligate in the world. Overall, Asia is the bastion of thrift. Look not at the speculative short-term forces driving today's markets to manic extremes, but at the long-term fundamentals that govern economic processes. Several years from now the Asian currencies in real terms will have risen vastly relative to the dollar.

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⁵ Long before the Asian crisis reached its current severity, David Hale of Zurich Kemper speculated on a possible \$300 billion U.S. current account deficit – almost 4% of U.S. GDP. At that rate the U.S. net external debt will be in LDC terrain at more than 20% in less than three years.

WHAT ABOUT THE BANKRUPT BANKS, THE BANKRUPT FIRMS, THE EXCESS CAPACITY?

Extremely high domestic savings rates inevitably risk inefficient investments.

At the margin, at very high rates of domestic savings and investment, real returns to projects will be lower than otherwise. A low rate of return on projects at the margin implies a fringe of projects that do not make it.

What about the legacy of bad loans and failed banks and overinvestment in real estate and unproductive assets? Extremely high domestic savings rates inevitably risk inefficient investments. It is difficult to intermediate such high savings flows to efficient projects. At the margin, at very high rates of domestic savings and investment, real returns to projects will be lower than otherwise. A low rate of return on projects at the margin implies a fringe of projects that in fact do not make it. In such a regime, to clear the market real interest rates on deposits should be very low, not very high as the IMF would have them. In such a regime of excess domestic savings, current accounts should be in balance and potentially destabilizing short-term capital flows from abroad should be avoided.

I can remember my first visit to Korea in an advisory capacity in 1984. The economy was still operating in the shadow of the Third World debt crisis of 1980-1983 – a crisis which caused a significant recession in the Korean economy. At the time, it was said that Korea had a financial crisis of sorts that afflicted both its banks and its highly leveraged firms. When I looked at the balance sheets and income statements of the chaebol, by Western standards they looked bust even then. I remember discussing this with Kim Jae Ik, the most noted policy economist of his day and economic advisor to the President of Korea. He said at the time that the chaebol were always overindebted and always had low cash flows and precarious debt service coverage ratios. (He opined at the time that the chaebol earned their returns from huge land holdings whose value always rose rapidly as Korea's 40 million man economy raced ahead at a double digit rate on a land mass the size of Pennsylvania.) Meredith Woo-Cumings makes the same assessment about the constancy to Korean indebtedness since the early 1980s.

...Remarkably, the chaebols today remain as leveraged as they were in 1969 when Korea experienced its first major debt crisis, or in the 1970s when they were hungry recipients of the so-called "policy loans" which, given high inflation, were outright subsidies. The problem of non-performing loans has not abated, either, but remained more or less steady for the past 30 years. My random inquiry shows that in 1983, in the midst of recession and three years of poor export performance, the percentage of non-performing loans in the banking sector was estimated to be 14 percent of total loans – about the same as what it is today.

In the early 1980s, there was widespread criticism that government guidance in the Korean economy led to inefficient investment. There was one firm that made a bold assault on the technological frontier; it took on a project to produce nuclear power generation equipment. It succeeded in its production effort, but the nuclear market had been eclipsed by competitive power sources. It stood as a famous white elephant.

At the same time, Samsung built Korea's first 64K RAM plant, all with debt – and two years into the 64K product cycle. At the time, I thought this effort would go the way of the nuclear power equipment project; it seemed the height of foolishness to build a plant to make a product with so short a life cycle so late into that cycle. In fact, Samsung built the plant in half the time it took to build one in the U.S. and at a fraction of the cost. More amazing yet, when the plant came on stream it had the highest yields in the world and it succeeded. Its success revealed the depth of Korea's human capital and the successful collaboration of government and industry in training Koreans abroad in U.S. universities and Silicon Valley. It also underscored the success of Korea's government and industry intelligence effort that targeted U.S. scientific and technological know-how.

As early as the mid 1980s there were plenty of inefficient investments in Korea. But there were so many successful projects relative to the failures that the Korean economy underwent an unprecedented modernization in the decade that followed. There is no reason to believe the formulas for success that worked so well in the past will fail suddenly now, as long as the development strategy of the past continues to be carried out.

The banking problem in East Asia is more serious than the fringe of inefficient investments. To be sure, Thailand has excess investment in real estate, but that happens in all regimes: witness the overinvestment in U.S. commercial real estate in the late 1980s. Thailand had the fastest economic growth rate of any nation over the last decade; rapid growth absorbs real estate excesses in a fairly short time span. It is not the unoccupied buildings in Bangkok that is the serious problem; rather it is the legacy of bad loans against inflated real estate values that constitutes the greater threat. In this regard, Thailand, more so than Korea, has contracted the Japan disease. If it handles its banking problem like Japan has, the banking system will not function well as a savings transfer mechanism for years and economic growth will be seriously impeded. Japan failed to use monetary policy aggressive-

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If East Asia handles its banking problem like Japan has, the banking system will not function well. For years Japan failed to use monetary policy aggressively to reflate, as Mieno, who burst Japan's bubble, kept fighting the last war, keeping money supply growth low and real interest rates high. Japan has failed to boldly purchase the bad loans from its banks and monetize their purchase.

ly to reflate, as Mieno, who burst Japan's bubble, kept fighting the last war, keeping money supply growth low and real interest rates high. Faced with popular disapproval of the financial sector, Japan has failed to boldly purchase the bad loans from its banks and monetize their purchase, thereby restoring the all-critical bank intermediation process to full functioning. If the Asian countries stick with IMF policies of high interest rates, they will commit the same errors as Mieno did in Japan. These highly indebted economies need bold government intervention in the banking system, aggressive monetary reflation and negative real interest rates to avoid a protracted impairment of the all-critical banking system.

THE OUTLOOK FOR THE ASIAN MODEL OF CAPITALIST DEVELOPMENT

The optimists about economic growth in Far East Asia point to the extraordinary economic performance of the region over the last several decades. They emphasize that, since the industrial revolution, no region has sustained such rapid economic growth as Far East Asia has. One cannot fail to attribute much, if not most, of this growth miracle to the Asian model of "alliance" capitalism.

The pessimists regarding Asia focus on its excesses: Alliances that spill over into egregious corruption; high debt levels that lead to financial crisis; and rigid bureaucracy. To some degree, both camps are correct. The Asian model of capitalist development was an indisputable success but it has spawned indisputable excesses. The issue of the day is whether the Asian model is obsolete in a world of globally linked markets and whether its excesses are so endemic that it must be abandoned for an Anglo-American style laissez faire market regime.

Before addressing the question, is the Asian model which worked so well in the past now obsolete, let us first consider in the broadest economic terms the potential for growth in emerging Asia. Paul Krugman criticized the East Asian economic growth miracle on the grounds that it was based on investment spending and not productivity growth. In this regard it was like the Stalinist period in the USSR where, for a period, massive investment spending in obvious heavy industrial sectors generated high economic growth. However, a closer look at Asian growth reveals that this has not been the case. Korea's growth was not simply based on expenditures on fixed capital employing the technologies of yesteryear. The Samsungs of the world have moved virtually as close to the technological frontier as one could

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Korea has gained dominant positions in industries at the technological frontier where it weds labor and capital as efficiently as any industrialized economy.

expect. In wedding labor and capital, Korea has been highly efficient relative to its Western counterparts: Plants are built in half the time at half the cost and run at utilization rates that exceed their rated capacity. Korea has had extraordinary rapid human capital deepening and has developed extraordinary technical prowess. It is now the seventh ranking recipient of patents among all the countries in the world. It has effectively put to work this human capital in gaining dominant positions in industries at the technological frontier where it weds labor and capital as efficiently as any industrialized economy. Empirical studies confirm such productivity gains.

The potential for economic growth is a function of a country's distance from the depth and vintage of the fixed and human capital stock of the most advanced economies of the world. Jeffrey Sachs and Steven Radelet make this point in a recent Nov./Dec. article in *Foreign Affairs* entitled *Asia's Bright Future*. "All other things being equal, growth rates tend to fall gradually (over decades) as developing countries close the income gap with the United States (at around \$27,000 per capita). A country at one-fourth the U.S. income level experiences a growth rate roughly 2.8 percentage points above the U.S. rate. If the United States manages per capita income growth of 2.0 percent per year, a country at \$7,000 per capita (such as Thailand) could have per capita income growth around 4.8 percent per year, equivalent to aggregate GDP growth of 6.5 percent to 7 percent per year."

Throughout history we have seen how high economic growth has been due to some countries catching up with the most advanced economies. The growth of the most advanced economies remains slow, because their growth is restrained by the slow pace of technological progress. After the initial burst of industrialization, Britain, the most advanced economy in the world, grew very slowly after the mid-18th century. Growth in the U.S. exploded in the late 19th century as the U.S. caught up with Britain. It then fell too close to the British growth rate. The countries in Europe and Japan followed, particularly in the two decades after the Second World War. The highest growth was achieved by Japan and Italy, the two most underdeveloped of the G-7 economies at the war's end.

All of emerging Asia has huge room for significant growth. We can expect growth to be slower in the more advanced nations like Korea. But it should remain very high in the less advanced nations like China. The potential for very rapid growth is still there. The question is: Will the process that achieved it in the past still succeed in the future? Such potential has always existed throughout the emerging

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Growth of Gross Domestic Product Per Man-Year in the United Kingdom Compared with Six Other Industrial Countries, 1873-1973*							
Period	UK	USA	Sweden	France	Germany	Italy	Japan
1873-1899	1.2%	1.9%	1.5%	1.3%	1.5%	0.3%	1.1%
1899-1913	0.5	1.3	2.1	1.6	1.5	2.5	1.8
1913-1924	0.3	1.7	0.3	0.8	-0.9	-0.1	3.2
1924-1937	1.0	1.4	1.7	1.4	3.0	1.8	2.7
1937-1951	1.0	2.3	2.6	1.7	1.9	1.4	-1.3
1951-1964	2.3	2.5	3.3	4.3	5.1	5.6	7.6
1964-1973	2.8	1.6	2.7	4.6	4.4	5.0	8.4
1873-1951	0.9	1.7	1.7	1.4	1.3	1.3	1.4
1951-1973	2.4	2.3	3.0	4.4	4.8	5.5	7.9
1873-1973	1.2%	1.8%	1.9%	8.0%	2.0%	2.4%	2.6%

*R.C.O. Matthews and C.H. Feinstein, and J.C. Odling-Smee, "British Economic Growth 1856-1973."

world, but in none of these countries has this potential been realized at the pace it has in Southeast Asia.

Radelat and Sachs explain Far East Asia's success on the "flying geese" model "according to which countries gradually move up in technological development by following in the pattern of countries just ahead of them in the development process."

Radelat and Sachs appear to explain Far East Asia's success on the "flying geese" model "according to which countries gradually move up in technological development by following in the pattern of countries just ahead of them in the development process. In this vision, Korea and Taiwan take over leadership in textiles and apparel from Japan as Japan moves into the higher technology sectors of electronics, transport, and other capital goods. A decade or so later, Korea and Taiwan are able to upgrade to electronics and auto components, while the textile and apparel industries move to Indonesia, Thailand and Vietnam."

For them, it is government's creation of an export platform, not government planning and allocation of resources to domestic industries through the credit facilities of a domestic banking system, that created success.

For Radelet and Sachs, government intervention in the East Asian economy helps. However, it is not government industrial planning and allocation of resources to domestic industries through the huge credit facilities of a domestic banking system that create success. Rather, it is government's creation of an export platform, where infrastructure and subsidies are provided to multinationals to create new export industries, that is the key to success. Radelet and Sachs attribute Samsung's critical initial success in semiconductors to foreign expertise: "Samsung went from chip assembly to global leadership in 64K random access memory chip production allied with IBM and other electronics leaders." They ignore the fact that Samsung built their plant in half the time and at half the cost of a U.S. plant, all with debt, and that, owing to the training of Koreans that government and Samsung supported for years, they were able to achieve the highest yields in the world shortly after the plant was up and running.

Alan Greenspan, in a recent speech in New York echoed the consensus view that this “flying geese” model of development worked in the early phase of East Asian economic development but, like the Soviet Union, has reached a dead end:

“The current crisis is likely to accelerate the dismantling in many Asian countries of the remnants of a system with large elements of government directed investment, in which finance played a key role in carrying out the state’s objectives. Such a system inevitably has led to the investment excesses and errors to which all similar endeavors seem prone...”

“Government-directed production, financed with directed bank loans, cannot readily adjust to the continuously changing patterns of market demand for domestically consumed goods or exports. Gluts and shortages are inevitable. The accelerated opening up in recent years of product and financial markets worldwide offers enormous benefits to all nations over the long run. However, it has also exposed more quickly and harshly the underlying rigidities of economic systems in which governments—or governments working with large industrial groups—exercise substantial influence over resource allocation. Such systems can produce vigorous growth for a time when the gap between indigenous applied technologies and world standards is large, such as the Soviet Union in the 1960s and 1970s and Southeast Asia in the 1980s and 1990s. But as the gap narrows, the ability of these systems to handle their increasingly sophisticated economies declines markedly.”⁶

From our point of view, such a view is blind Anglo-American arrogance. The Asian development state, with its government priorities, its high levels of bank transferred savings, and its government/bank/firm alliances worked well in Japan right up to Japan’s attainment of the global technological frontier. Japanese progress was the envy of the world in the late 1980s when it was far more economically advanced than the Far Eastern Tigers are now. And its problems since then are not problems of the development state. Japan’s problems stem from its late 1980s stock market and real estate bubbles. These bubbles were greatly aggravated by U.S. pressures on Japan at the time to stimulate its domestic demand and act as a locomotive for the world and thereby remedy the U.S.’s hemorrhaging current account deficit. They have left a legacy of bad debts in the banking system, and it is this legacy that has been Japan’s problem. Meanwhile, Japan Inc. has continued its progress on the real side

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Japan’s problems stem from its late 1980s stock market and real estate bubbles. Meanwhile, Japan Inc. has continued its progress on the real side of the economy.

⁶ The reader must try to imagine the sentiments of leading Japanese government bureaucrats and corporate leaders who have succeeded in dominating many of the world’s advanced industries when confronted with such hubris which totally dismisses a system which for them has worked so well.

of the economy. Japanese companies continue to maintain global leadership positions. Productivity gains in Japan continue to exceed those in the U.S. by a wide margin. More importantly, Japan Inc. has expanded throughout Southeast Asia, creating a sophisticated production hierarchy that has made it an ever more powerful force in many world industries. To some degree this was masked by the extreme strength in the yen into 1995 which eroded Japanese competitiveness. But the continued real sector progress of the Japanese development state will resurface in spades at today's new exchange rates.

The Asian model is many faceted. More importantly, its complex facets are uniquely integrated. The increasing integration of the global economy has created pressures to introduce Anglo-American free market elements into the Asian economic regime. Yet, to hybridize the Asian model may impair its effectiveness.

The Asian development state “works” for Japan at the technological frontier. It has been working well in the relatively advanced economies of Taiwan and Singapore. There is no reason to assume that, for the emerging countries of Asia, it will not work well as their economies advance on the complexity, sophistication, and technological prowess of a Japan.

It is our opinion that, for those East Asian emerging countries that still remain far from the global technological frontier and that have rapid human capital deepening, the Asian model of strategic intervention and economic alliances will continue to function well. Its excesses can be constrained by better regulation. Laissez faire capitalism has been equally prone to excesses throughout its history. Its advocates have not jettisoned it as a consequence; rather they have restrained these excesses through regulation. However, the future effectiveness of this model of economic management does face a very real risk from the globalization of the world economy. The Asian model is many faceted. More importantly, its complex facets are uniquely integrated. The increasing integration of the global economy has created pressures to introduce Anglo-American free market elements into the Asian economic regime. Yet, to hybridize the Asian model with Anglo-American free market departures may impair its effectiveness.

The literature on the Asian model of development focuses on its socioeconomic structure. This structure encompasses government guidance of the economy, patterns of inter-firm cooperation, and labor/management cooperation. The first – government guidance – is highlighted. Industrial strategy initiatives are taken by the state. Ministries identify priority industries. Batteries of incentives are provided to firms: fiscal incentives; assumption of infrastructure costs; tariff protection; state sponsored research and development; programs to promote business relations in foreign countries; and the

like. Government collaborates directly with business. Powerful oligopolies are supported through the government influenced financial system. Corporate alliances are encouraged. Excessive competition is curbed. Information and finance is provided to firms in an effort to gain global market dominance.

Asia's uniquely deep structures of bank financing of the private productive sector are integral to the Asian development state and its alliance capitalism. As we argued earlier, extremely high saving rates, egalitarian income distributions, and low household risk profiles almost necessitate high ratios of bank deposits and corporate bank indebtedness in Asian economies. In any economy, recurrent random external shocks periodically perturb corporate cash flows. When debt levels are high, such variations in cash flows place debt service at risk. In unfettered laissez faire market regimes, Hobbesian self-interests quickly lead lenders to call loans. As loan portfolios deteriorate, depositors run on banks. Only in government-guided regimes of alliance capitalism do lenders and borrowers cooperate sufficiently to allow deeply indebted firms to weather short-run perturbations in cash flows or funding sources without tearing down the fabric of financial structure. Not only do Asian patterns of thrift dictate deep structures of bank deposit/loan intermediation; such deep structures can be sustained only in the collaborative Asian economy.

After the current severe financial crisis in Asia, there is no alternative to this regime of high deposit savings and bank loan intermediation. Korea has made repeated efforts to encourage domestic savings mobilization through a domestic equity market. In 1973 the government forced the country's largest companies to distribute shares to the public. It provided multi-year credit facilities to small savers to purchase shares. The stock market rallied, raising share valuations to 15 times earnings. Then the market collapsed. The revenues, profits and net worths of publicly traded companies grew at double digit real rates thereafter. Yet, small savers steadily liquidated their stock holdings. When I visited Korea in the mid 1980s, equities were selling at three to four times earnings and households were still selling the shares they bought in 1973-1974.

In Japan, more than 90% of the households who bought mutual funds in the 1980s have sold their fund holdings. For seven years since the bursting of the stock market bubble, Japanese households have been exiting the stock market. Korea's households entered the stock market once again over the last decade. With the current crisis taking share prices to 10-year lows, we will see the same long-term exodus of

Extremely high saving rates necessitate high ratios of bank deposits and corporate bank indebtedness. When debt levels are high, variations in cash flows place debt service at risk.

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households from the equity market that we saw in Korea in the 1970s and early 1980s and that we have more recently witnessed in the Japanese equity market in the 1990s. As a result of this crisis, domestic savings mobilization through the stock market will be a dead issue in Asia for a decade. More than ever, Asian patterns of thrift will result in deep structures of bank deposits and loans.

The Asian model of guided markets with inter-firm cooperation not only supports such deep structures of bank intermediation; these structures are the key instrument for resource transfer that makes it possible for the development state to achieve its ambitious strategic objectives. Government industrial strategies are realized through designated groups of firms only because the vast savings of the banking sector can be called upon to finance priority projects. Without the instrument of the government-guided financial system, ambitious development strategies would not be carried out. Without the willingness of entrepreneurs to take on levels of debt that are deemed too risky in the West, it would not be possible for firms to make the quantum advances in technology and scale that have taken the Asian economies to the forefront of so many global industries.

The success of the Asian development state requires the synchronous interplay of many socioeconomic units. Integral to this interplay is the behavior of all the economic agents – depositors, bankers, and borrowers – that make up the structure of deep bank deposit/loan intermediation. High levels of indebtedness, high levels of bank/firm cooperation, and high levels of government guidance in finance are three separate but essential features of the Asian development state.

Viewed from this perspective, it is apparent that today's IMF policy prescriptions may be anathema to the Asian model. Deflationary shocks in the form of high real interest rates and fiscal austerity threaten financial instability. Asia always teeters on the brink of a debt problem and a banking problem. High real interest rates cannot be paid out of cash flow; therefore, borrowers and lenders must agree to capitalize such high real financial charges. High real interest rates compound the real value of debts. Such compounding threatens severe debt difficulties and amplifies such difficulties, when they arise, into financial crises. Restrictive fiscal policies similarly depress aggregate demand and corporate cash flows. Negative perturbations to cash flows create debt service difficulties, lead to further debt financing of cash flow shortfalls, and eventually risk default.

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The IMF program calls for an opening of Asian financial markets and ownership of Asian financial institutions by foreigners. The Asian economy, with its sky high savings rate, encounters enough difficulty putting its domestic savings to work productively; foreign savings are an excess that is not needed. Why, then, open the economy to foreign short-term capital? More importantly, volatile foreign “hot money” capital flows can destabilize the Asian edifice of deep debt intermediation. The Asian model requires a commitment by its key parties, including its financial intermediaries, to the strategic objectives of the state. In return for this commitment, these intermediaries enjoy the support and cooperation of the government and corporate bodies they are allied with. Mobile foreign portfolio and short run bank capital is invested opportunistically with no interest in national objectives and no long run commitments to the firms and institutions in which it invests. Of all sources of funds, such mobile foreign capital is most prone to “run;” consequently it poses the greatest possible threat to the Asian development state’s delicately balanced financial structure.

As for foreign ownership of Asian financial institutions, Western owners of financial institutions will play by their rules, their guidelines, and their prudential limits. That is not compatible with the government guidance, the bank/firm cooperation, and the high levels of corporate indebtedness that are at the core of the successful operation of the Asian development state. Initially, foreign ownership of Asian financial institutions may impede the aggressive growth strategies of the Asian-guided economy. In the end, the odds are that financial intermediaries owned by Westerners will wither relative to the rest of the rapidly-growing Asian economy.

THE NEAR TERM RISKS

The principal near-term risk in East Asia lies with the IMF and its policy prescriptions. As so many now realize, the IMF policy prescriptions were designed for Latin American countries with low savings rates, large and chronic fiscal deficits, embedded high inflationary expectations and limited export machinery. Restrictive fiscal policies make no sense in Asia where fiscal balance prevails. One-sided reliance on restrictive demand management is unnecessary in countries where the capacity to expand exports is great. Depressing aggregate demand causes deterioration in corporate cash flows, aggravating the domestic debt problem. High real interest rates directly compound domestic debts, thereby making financial structures even more unstable.⁷

⁷ Joseph Stiglitz agrees: “Research by the World Bank not only has identified pivotal factors contributing to financial crises, including sharp rises in interest rates...” New York Times, Oct. 31, 1997.

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As for foreign ownership, Western owners of financial institutions will play by their rules, guidelines, and prudential limits. That is not compatible with the government guidance, the bank/firm cooperation, and the high levels of indebtedness at the core of the Asian development state.

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In the current instance, the IMF prescription for emerging Asia has been contaminated by Washington's own agenda. Throughout the IMF negotiations in Korea, a U.S. Deputy Secretary of the Treasury stood in the wings. Not only has the IMF insisted on ownership of Asian firms and financial institutions and greater openness to short-term foreign capital as part of the required financial reform and liberalization; Koreans are being asked to reduce import barriers to foreign automobiles and to close semiconductor plants. Such policy changes that can work against short run trade improvement have not been part of short run oriented IMF balance of payment support operations in the past. The spectre of a U.S. political agenda has created widespread anger in Asia over IMF programs.⁸

IMF policies threaten recession; unemployment threatens political unrest. The shadow of Washington's meddling hand inflames opposition to governments who feel forced by short run balance of payments pressures to acquiesce to unpopular IMF intervention. IMF policies threaten civil unrest. Civil unrest threatens debt default and military coups. These are the principal risks and they are very real.

Deflationary IMF policies threaten recession. In countries with minimal welfare support to workers, unemployment threatens political unrest. Attacks on the pillars of the Asian development state – its ministries, its financial intermediaries, and its giant corporations – extend sentiments of revolt to the highest levels of power. The shadow of Washington's meddling hand inflames opposition to governments who are forced by short run balance of payments pressures to acquiesce to unpopular IMF intervention. IMF policies threaten civil unrest. Civil unrest threatens debt default and military coups. Until the IMF radically changes its policy, these are the principal threats and they are very real.

What should the IMF be doing? The IMF should stress the strengths, not the weaknesses, of the Korean economy, thereby calming the markets rather than further convincing them of the need to flee these countries.

What should the IMF be doing over the short run amidst this crisis? Again, Jeffrey Sachs has it right. "A better approach would have been for the IMF to stress the strengths, not the weaknesses, of the Korean economy, thereby calming the markets rather than further convincing them of the need to flee the country." The IMF should not be calling for deflationary demand management policies which are clearly inappropriate. Nor should they be calling for changes in the delicately poised financial structure of the Asian development state which in the end cannot and will not be changed. The IMF should make it clear that the macroeconomic fundamentals of these countries are absolutely superior to those of the countries it usually is called upon to finance and that current account improvements will soon make it clear that

⁸ "Wall Street has become a very powerful influence in terms of seeking markets everywhere. I mean, Morgan Stanley and all these gigantic firms want to be able to get into other markets and essentially see capital account convertibility as what will enable them to operate everywhere. Wall Street views are very dominant...They want the ability to take capital in and out freely. ...it also ties in to the IMF's own desires, which is to act as a lender of last resort...as the apex body which will manage this whole system. So the IMF finally finds a role for itself, which is underpinned by maintaining complete freedom on the capital account. It should be remembered that many countries have grown without capital account convertibility. Look at China for example, it has had very high growth rates, Japan, Western Europe since the War—it is only recently that CAC has become the norm there. In my judgment, it is a lot of ideological humbug to say that without free portfolio capital mobility, somehow the world cannot function and growth rates will collapse." Jagdish Bhagwati, *The Times of India*, Dec. 12, 1997.

these countries warrant external short-term capital investments. Bankers do not want to lose major clients over the longer term; they, as well as hedge funds and institutional investors, have an incentive to step in and invest if they believe the conditions warrant it.

On public television, Stanley Fisher of the IMF was asked, "Why should the IMF be financing such countries that got involved in unsound borrowings?" One of his answers was that the IMF did not want these countries to become export machines. What the IMF should be saying is that, given the macroeconomic fundamentals of these countries, at prevailing exchange rates they will become intolerably large export machines. The IMF should argue that the resulting current account surpluses will soon make it abundantly clear that these surpluses will become so intolerably large to the other countries of the world that the recent Asian currency devaluations cannot possibly persist. Already the Fund has ample evidence to point to in large current account surpluses in Korea, Malaysia and Thailand.

In the article cited earlier in this paper, Joseph Stiglitz got the problem of, and solution for, Asia right. Stiglitz is no less than the chief economist of the World Bank. It is not a stretch to ask that his position be the official policy position of all the major multilateral institutions as well as the Treasury departments and central banks of the principal bilateral lenders. This would greatly restore confidence in markets that are clearly governed by short-term trends and herd behavior. Of course, it is probably difficult to curb the ill-informed ideological prejudices of a Greenspan that we cited above or, worse yet, the apparent self-serving political agendas of the U.S. This short-sightedness of the U.S. and the IMF is most unfortunate. The huge social costs of this crisis could breed an anti-Western sentiment that could become so acute as to cause Asia to coalesce into a nationalist regional bloc. Having spent the years 1971-1989 advising on financial matters in developing economies in crisis, I can remember no cases where I sensed anything like this potential for anti-Western sentiment and massive geopolitical change.⁹

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⁹ The following sentiments are from the Chinese People's Daily. BEIJING, Jan. 6, (Reuters) - By imposing harsh terms on financial aid to troubled Asian nations, the United States was forcing into submission economic rivals in the region. China's Communist Party mouthpiece portrayed U.S. intervention in the Asian currency crisis in cynical terms and said it indicated a new relationship between Washington and countries in the region. "By giving help it is forcing East Asia into submission, promoting the U.S. economic and political model and easing East Asia's threat to the U.S. economy." The newspaper said the United States was stressing the authority of the International Monetary Fund (IMF) during the crisis to further its own strategic aims.

The new president of Korea, Kim Dae Jung, was persecuted by the prior political regimes and found asylum in the U.S. He is a populist with a strong commitment to smaller businesses rather than the chaebol who were so closely involved with the prior regimes who persecuted him. Kim Dae Jung's sympathies may encourage IMF and U.S. policies over the near-term. The implementation of these policies will prove disruptive to the workings of the development state. They will impair near term economic performance and raise the level of unemployment. This will increase the risk of social unrest. If the IMF and U.S. succeed in imposing their conditions only because Korea is in financial distress and they result in domestic political unrest, they will in the end generate a severe nationalist backlash. The development state in Korea is deeply rooted. It has been very successful in the past. The odds are that it will persist under the new political regime.

ASIAN DEVELOPMENT STRATEGIES WILL DEEPEN FURTHER AS CHINA'S HEGEMONY EXPANDS

The West has long been envious of Asia's economic miracle. It has also been fearful that recent relative trends in economic growth in Asia and the West project economic and eventual strategic global dominance by Asia at some point quite early in the next century. It is not surprising that the Asian currency crisis has been greeted by Western observers with a considerable self satisfaction. The Asian juggernaut now seems no longer a threat; Anglo-American free market capitalism has triumphed, as it did over the former communist bloc. Western complacency assumes that the Asian nations will dismantle their state strategies and state/bank/firm alliances. The Asian rot will be purged with bankruptcies of financial institutions and firms, and Asian markets will be handed over to Western multinationals.

The West mistakes Asian self-control and pragmatism in the face of a short-term crisis for capitulation to Western ways. Listen closely and you will hear the stirrings of a new Asian nationalism. Mahathir, branded as a "nut case" by the West, dares to say what Asians think:

KUALA LUMPUR, Dec 31 (Reuters) – Prime Minister Mahathir Mohamad told Malaysians on Wednesday they must be willing to make sacrifices in defending the nation's currency or risk being "re-colonized" by foreign powers.

"The world and modern civilization will not show any sympathy and offer their hand to help us because we are facing economic pressure. The laws of the jungle are still rampant. Might is right," Mahathir said.

Arrogant Westerners now assume that Asian nations will dismantle their state strategies and state/bank/firm alliances. The Asian rot will be purged with bankruptcies of financial institutions and firms, and Asian markets will be handed over to Western multinationals.

The West mistakes Asian self-control and pragmatism in the face of a short-term crisis for capitulation to Western ways. Listen closely and you will hear the stirrings of a new Asian nationalism.

“What is a fact is the fall in our currency’s value has made us poorer, exposing us to the possibility of being controlled by foreign powers. If this happens, we will lose the freedom to run our country’s economy and with it our political freedom also. In short, we will be re-colonized indirectly,” he said.

Mahathir said borrowing money overseas to save the economy would not guarantee the country’s problems would be solved. “We cannot give up and surrender. We must be willing to face challenges, willing to sacrifice in defending our freedom and our honor. Our struggle is not only unfinished but has become more critical,” Mahathir said.

More revealing are the statements of Eisuke Sakakibara, Japanese Deputy Finance Minister for International Affairs. Westerners assume that Japan will now go the Western route, letting bankruptcies of firms and financial institution fail, thereby cleaning the Asian rot and paving the way for superior Western style practices. Yet, “Mr. Yen,” (Sakakibara) long respected in the West as one of Asia’s most astute economic policy makers, is sending out a very different and quite defiant message.

TOKYO, Dec. 28 (Reuters) – The Japanese government should not allow any more bank failures, Eisuke Sakakibara, Deputy Finance Minister for International Affairs, said on Sunday....He said that Hokkaido Takushoku Bank Ltd., which recently collapsed, should not have been allowed to fail....Sakakibara said Tokyo should use its planned financial stability package which involves a maximum of 30 trillion yen (\$230 billion) in public funds for use to stop it from getting worse.

“We should make clear to the public that we will not allow banks to fail. We should not let securities companies of considerable size to fail either....”

Sakakibara said it was up to politicians and bureaucrats to save banks from failing, and it was up to banks to prevent companies from failing. “We should not let companies fail either,” he said.

These are the words of a top policy maker insisting on more, not less, government intervention, on stronger, not weaker, alliances between government, banks and firms.

In our opinion, the Asians know all too well the Asian way and remain confident it works. For this reason, we are convinced that, despite

Mahathir tells Malaysians they must be willing to make sacrifices or risk being “re-colonized” by foreign powers. “If this happens, we will lose the freedom to run our country’s economy and with it our political freedom also.”

Sakakibara is sending out a quite defiant message insisting on more, not less government intervention and state/bank/firm alliances: The Japanese government should not allow any more bank failures, Hokkaido Takushoku Bank should not have been allowed to fail... “We should not let securities companies of considerable size to fail either...” It is up to banks to prevent companies from failing. “We should not let companies fail either.”

The costs of restrictive policies have been writ large by Japan's failure. Japan is now moving toward rapid expansion of the monetary base and to decisive bailout measures for the banks. Emerging Asia will benefit from Japan's bad example.

near-term compromises with Western sources of balance of payments finance, the Asian countries will keep intact the mechanisms that are critical to their development strategies. This will require policies of reflation, with special emphasis on the banks. The costs of restrictive policies have been writ large by Japan's failure to act promptly and decisively in the past. The most recent phase of the post-bubble crisis in Japan is now moving the Bank of Japan toward rapid expansion of the monetary base and the government to more decisive bailout measures for the banks. Emerging Asia will benefit from Japan's bad example, and probably avoid the stagnation created by a disfunctioning banking system.

In the months to come dramatic improvements in current accounts will restore lender confidence and start to pay down external debt. For the time being Asia will try to compromise with the IMF and the West to patch its external financial fabric together. But, as symbolized by the meeting of the heads of state in Mahathir's home, the current crisis is leading Asia away from the West and toward regional cohesion. Japan will sit less on the fence and China will have taken a giant step toward displacing U.S. hegemony in Asia.

Eventually we expect that the regional facility that Mahathir and China want will be established. This will stabilize the region. It will support and thereby increase the effectiveness of the Asian development state.

Once events stabilize in East Asia and the Asian countries are no longer dependent over the short-term on Western balance of payments financing, we expect that the regional balance of payments financing facility that Mahathir and China want will be established. This will significantly stabilize the balance of payments of the countries in the region. It will support and thereby increase the effectiveness of the Asian development state. It is noteworthy that some Asians are already arguing that, had such a facility been in existence, the current Asian crisis may have been avoided.

The pull of the Anglo-American model on some Asians will not persist for long. The U.S. stock market is far more overvalued than it has ever been. The current U.S. dollar disequilibrium exceeds that of 1984-1985.

Some Asians, dismayed by the current crisis and impressed by the strong non-inflationary growth in the U.S., are inclined to consider Anglo-American free market reforms. This pull of the Anglo-American model on some Asians will not persist for long. The U.S. stock market is far more overvalued than it has ever been; it is the greatest disequilibria in the U.S. financial system since the 1930s. The dollar has been in a two and a half decade decline punctuated by repeated dollar crises. The U.S. current account and external financial position is more precarious now than at any time in that two and a half decade period. The current U.S. dollar disequilibrium exceeds that of 1984-1985. The U.S. stock market and dollar are two bubbles that will burst, and most likely in unison. The reversions of these two

markets in disequilibrium to their mean will create a significant measure of under-performance in the U.S. economy. The current arrogance and complacency over the U.S. model will then give way to dismay over U.S. economic performance and the dollar.

Asia will grow rapidly again and faster than most think. The Asian way that worked in the past is too deeply rooted and it worked too well. It will work well again. Despite short-term compromise, Asia will not reform “Western style” as some arrogant Western commentators now believe it must. Prior to this crisis, Asian “development strategies” had been deepening throughout the region. Such strategies that utilize collaboration of the state and the financial and corporate sectors, that rely on alliances and deep structures of bank intermediation, are simply not compatible with volatile international capital flows and Hobbesian Western market behavior.

China, above all, will resist Western ways. China’s relatively closed borders to volatile Western capital will probably allow it to emerge from the regional crisis relatively unscathed. This will not go unnoticed by its Asian neighbors who now see Western “hot money” and Western dominated multilateral institutions as a threat.¹⁰ China has just completed a four year adjustment program; it is now well prepared for growth. It has the confidence to lower interest rates amidst the regional turmoil. It will be the economic leader in the recovery. Asian development strategies will deepen further as China’s hegemony expands. And, as in the past, they will spawn success.

I am enclosing quotes from an early draft of a paper¹¹ by a noted Asian specialist, Robert Wade of Brown University, documenting this inevitable tide of the Asian development state across all of Asia – a tide which has created an economic miracle in the past and which will probably carry Asia to global economic supremacy in the future.

- *In this paper I argue three main points. First, Japan has constructed a regional political economy in which it stands at the top of the most important regional production hierarchies, such that even as outgoing FDI con-*

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China’s relatively closed borders to volatile Western capital will probably allow it to emerge from the regional crisis relatively unscathed. This will not go unnoticed by its Asian neighbors. China will be the economic leader in the recovery. Asian development strategies will deepen further as China’s hegemony expands. As in the past, they will spawn success.

¹⁰ Nor will this lesson be lost on Westerners. David Hale of Zurich Kemper stated in the Dec. 22, 1997 edition of Barons: “In fact, several weeks ago, the economist found himself in the curious position of congratulating a longtime acquaintance and high-ranking Chinese central banker on the fact that the nation still has such tight controls on the convertibility of its currency that one of the NE York hedge-fund-jockeys could mount a serious attack on the yuan.” “I couldn’t believe I was saying this, given my long-standing belief in the free interplay of market forces,” recalls a somewhat bemused Hale.

¹¹ Robert Wade, “Globalization and Flying Geese?”, States, Firms and Regional Production Hierarchies in Asia.

production efficiency.

The combination of the subcontracting system, the cross-shareholding system, and the uniformity-across-large-categories employment system has, it seems, constituted a powerful mechanism of technological innovation and

a factor of production.

They can treat the work force as "stakeholders" of the firm, rather than as their more share-price exposed counterparts elsewhere. In particular, Managers can, therefore, give more weight to long-term growth, research and development, capture of market share, and avoiding redundancies have with the firm than with profit derived from holding its shares. Managers more concerned with their stake in the business dealings they implication that the external influences on firms come from other salaried The keiretsu are cemented by cross-shareholding... This has the major

compared to the other major capitalist economies.

Japanese capitalism has been called "alliance capitalism," so marked are the patterns of interfirm cooperation and management-labor cooperation

Ministries – especially the Finance Ministry – continue to have substantial discretionary powers, managing the now expanded competition in the name of avoiding the great Japanese bete noire, "excessive competition."

about consumer sovereignty and the rights of the individual.

...two major businessmen's associations promoting deregulation rely primarily on arguments about how to make the nation great, not arguments

JAPAN

of fast-growing East and Southeast Asian markets.

Third... that Taiwan and Korea are not reducing their dependence on Japan, and those (countries) of Southeast Asia are probably increasing it, is bad news for U.S. and European firms anxious to increase their share

intervention.

Second... in Southeast Asia... the current situation may... represent a move towards rather than away from the East Asian model of strategic

Inc may have loosened itself at home, but it is strengthening itself in Asia... mantled or bypassed in a shift towards the Anglo-American model. Japan, the Japanese developmental state have been retooled and refocused, not dis-instituted. The institutions of the value chain remain localized within Japan. The institutions of the most profitable and highest value-added segments at blistering speed

- *So far, however, the linchpin of the whole corporate system – stable cross-shareholding – continues with little erosion. Some 70% of share ownership remains in the form of cross-holdings (firm/firm, banks/firm).*
- *The out-rush of FDI was aimed not only at reducing the crushing pressure of the yen but also at reducing the trade surplus directly attributable to Japan and thereby reducing the U.S. pressures to reform the national economy in ways that lead to more imports. However, even as FDI soared, domestic spending on plant, equipment and R&D remained at one quarter of GNP. Japan's expenditure for non-defense-related R&D was 3% of GNP in the early 1990s, compared to a corresponding U.S. figure of 1.9 %.*
- *Japanese private investment flows have been complemented by the biggest bilateral aid program in the world.*
- *U.S. aid to Asia is less than a tenth of Japan's.*
- *Japan is by far the biggest donor of foreign aid to China, through which it has been laying the infrastructure of facilities and quanxi (social connections) that is now beginning to repay big dividends. Check into the best hotel in any provincial city and you are likely to find the offices of several Japanese trading companies. The U.S. has no aid program to China, and U.S. firms have little presence on the ground beyond Beijing and Shanghai.*
- *Japanese aid is closely tied to the use of Japanese suppliers. One study found that non-Japanese firms obtained less than 2% of the public works contracts financed by Japanese soft loans in 1989, and just over 6% in 1990.*
- *These contracts also offer Japanese firms an almost risk-free way to get learning-by-doing experience in Asian environments.*
- *Compared to all other countries, Japanese FDI and aid flows are highly coordinated. One expression is MITI's New Asian Industries Development Plan, produced (but never made public) in 1987. The plan set out a regional division of labor, identifying the sectors and countries that would be especially suited to Japanese investment and proposing to coordinate private investment with the Japanese aid program so as to validate location decisions of Japanese firms made in line with the plan.*

- *Selective and discretionary risk-reduction and cheap financing have been the key instruments of coordination.*
- *And (in the face of World Bank disapproval) the main aid agency gave concessionary finance to national development banks for on-lending to schemes of interest to Japanese multinationals.*
- *The investment race between Japanese firms prompted by all this encouragement has been managed by the various extralegal techniques of administrative guidance.*
- *The point bears repeating: Japan Inc., the Japanese developmental state by another name, is being replicated in the regional production hierarchies of Asia.*

ON TAIWAN:

- *In 1991 Taiwan was the biggest source of FDI in Malaysia and Indonesia, and the second biggest behind Hong Kong in China.*
- *China has become its largest economic partner. The largest destination for outbound telephone calls is the one place to which there are no direct telecommunication links – China! (Calls can be routed through a third country like Japan for a modest fee.)*
- *Taiwan (and Korea) are far ahead of all other developing countries in their endogenous technological capacity. The relative number of patents taken out in the U.S. by residents of different countries in a given year provides a rough index of technological capacity. In the mid-1990s Taiwan ranked number six in the world in the absolute number of U.S. patents awarded to its residents (not normalized for population), after Japan, Germany, France, Britain and Canada. Korea by 1996 ranked seventh, up from tenth in 1992. Taiwan and Korea are both ahead of Italy, Scandinavia, and the smaller European countries.*

ON TAIWAN'S INDUSTRIAL STRATEGY

- *Over the 1990s three big economic policy initiatives have been undertaken by the state.*
- *Initiative three has the Ministry of Economic Affairs engaging in what looks suspiciously like “picking winners,” or at least helping to make them.*

● Korea's dependence on Japan is much the same, for all that Samsung, Hyundai, and others have become household names. In auto assembly, for example, where Hyundai and Daewoo have had great success in penetrating foreign markets, all the leading Korean assemblers continue to depend

● The computer industry – hardware and software – is the main exception to the picture of subcontracting and heavy technological dependence on Japan. Here Taiwan's relationship is with the U.S., not Japan, and especially with Silicon Valley. The relationship is increasingly complementary and reciprocal rather than dependent. Many large and small Taiwanese companies have branches in Silicon Valley. Many thousands of Taiwanese engineers are working in the valley for U.S. firms. They form a tight community within the valley; they are in close contact with counterparts in Taiwan, and some are even known as "astronauts" for the amount of time they spend commuting between the two places, bringing tacit (as well as codified) knowledge backwards and forwards.

CHALLENGERS TO JAPAN?

● ... (Its) publicly-owned Industrial Technology research Institute (staff over 5,000) has encouraged its own staff and former staff to take out patents in foreign countries, especially in the U.S.

● ... has developed new high-tech industrial parks, modeled on the very successful Hsinchu Science-based Industrial Park.

● ... has directly helped Taiwanese firms bargain with their counterparts, offering tax breaks in return for agreed investment plans, especially for investment in R&D facilities.

TAIWAN'S MINISTRY OF ECONOMIC AFFAIRS

The ministry has identified some 24 key high-tech items in Ten Emerging Industries for promotion. The emerging industries include communications, semi-conductors, precision machinery, aerospace, and environmental goods and services. The industries and items were selected because they demand, are not energy-intensive, have high value-added, and are currently imported in large part from Japan. Firms producing these items are eligible for a battery of incentives that include incentives to purchase automated production equipment and technology and to increase R&D expenditure. As part of this initiative, the state gets access to private-sector information necessary for effective policy.

heavily on Japanese technology, production assistance and parts. The dependence will intensify as Samsung, Korea's largest conglomerate, gears up in auto production; it will import all its advanced technology from Nissan. The Korean makers have challenged Japan in newly emerging markets (not only China and Vietnam, but also Eastern Europe).

THAILAND

- *The standard interpretation says that its success reflects Thailand's adherence to the neoclassical "basics."*

GOVERNED MARKETS

- *The neoclassical interpretation is so dominant that the counter evidence has received little attention. But counter evidence there is. Some examples. First, econometric evidence suggests that exchange rate movements cannot account for export success. Second, trade liberalization – the other favorite neoclassical driver of success stories – cannot be invoked, either. During the 1980s the trade regime remained highly protectionist, indeed, became increasingly protectionist up to the late 1980s. Third, the government (Board of Investment, BOI) developed a battery of promotional techniques. These were extended to export projects.*
- *Also, the Bank of Thailand made available substantial concessionary finance for exporters. The combination of high effective rates of protection plus strong encouragement to exports looks like the early 1980s East Asian trade regime.*

DEVELOPMENTAL STATE?

- *Thailand is rather more like the East Asian development state than is generally thought, ascendant liberalism notwithstanding.*
- *Yet the central fact remains that, for all its fast growth Thailand engages in the world industrial economy largely as a subcontractor, and largely for Japanese firms.*
- *Japanese government agencies (JETRO, OECF, JICA, etc.) have been important in helping to make parts of the Thai state behave more like a developmental state, through research and advice about industrial strategy and through financing.*

CONCLUSIONS

- *Over the past 10 to 15 years the economies of East and Southeast Asia have been knitted together in the form of a regional production hierarchy, dominated by Japan.*
- *We see vividly in the Japanese and Taiwanese cases, spottily in the Thai case, the robustness of the developmental state, all the talk of globalization-forces-liberalization notwithstanding.*

CHINA (AND INDIA)

- *The future of every international issue one cares to think about depends on China. The adjustments in the world economy over the past 30 years as 150-200 million Japanese, Koreans and Taiwanese clawed their way up the world hierarchy are as nothing compared to the strains unleashed by the moving up of 1.2 billion Chinese, followed by 0.8 billion Indians.*
- *The determination of countries to eliminate developmental state practices is running at a high pitch, fueled by the alleged inevitability of globalization and by moral indignation of the rich and powerful who see their position threatened by upstarts. The core countries of the world economy have come together to forge a phalanx of international organizations and rules that preclude many practices of the developmental state model. The World Bank and the IMF have re-energized their advocacy of market liberalization, and the World Trade Organization (WTO) has recently been created to push in the same direction. They are soon to be joined by the Multilateral Investment Agreement (MIA), currently being negotiated by the OECD countries. It would make illegal many of the industrial policy measures adopted in East and Southeast Asia, including all those that treat foreign firms differently to domestic firms (in terms of export requirements, local content requirements, and so on).¹²*
- *In this spirit the U.S. and the European Union recently called on the South Korean government to stop an anti-luxury campaign – or face sanctions in the WTO.¹³ Senior figures in the Korean government, the U.S. and the European Union allege, have been whipping up popular feeling against imports of luxury goods in order to reduce Korea's (quite small) current account deficit. The U.S. representative at the WTO's council on goods warned Seoul to "issue an unequivocal public assurance that anti-*

¹² "M.I.A. culpa", *The Nation*, editorial, January 13/20, 1997, p.5-6. Lynn Mytelka reports (personal communication, 16 October 1997) that the list of waivers and temporary exemptions is five times as long as the MIA text itself.

¹³ "Seoul challenged to disown imports attack," *Financial Times*, 12 March, 1997, p.8. I thank Manfred Bienfeld for bringing this to my attention.

import behavior is inconsistent with Korea's international trade policy objectives." An EU representative warned, "A clear public statement from the Korean government disowning all anti-import aspects of the civil 'frugality' campaign is now necessary to dispel doubts about Korea's commitment to respect in full its WTO obligations." The Korean government replied that it has no involvement in the campaign, which is being run by civic groups. Of course, the very best form of protection is something that can be presented as a cultural preference for locally-produced goods. But are the core countries really going to make over other cultures in such an explicit way? They should certainly try to do so, says Business Week. It recently called for Washington to insist, bilaterally and through the OECD and the WTO, that East Asia and Southeast Asia give up practices of crony or quanxi or network capitalism. In crony capitalism, says Business Week, "personal connections can matter far more than price or quality," which "puts U.S. companies at a competitive disadvantage." Washington must therefore "insist that those nations who enjoy the fruits of the open, free trading system also play by its rules" – and adopt a system of national political economy in which sales are made on price and quality alone...

- *...In 1996 the Japanese Executive Director at the Asian Development Bank announced that the Asian Development Bank would create a new research institute dedicated to research and teaching about development issues. It is being funded by the Japanese government. And it is located not in Manila, with the rest of the ADB, but in Tokyo. A news report says, "The main reason for the choice of location is probably that Japan believes it will be easier to influence debate along the lines of its own development ideology through a Tokyo-based institution. It is likely to favor a somewhat greater role for the public sector than that espoused in the United States and parts of Europe."¹⁴ "The Japan International Cooperation Agency (JICA), which comes under the wing of the Ministry of Foreign Affairs, already seeks to apply Japanese thinking to development projects. Its efforts are sometimes met with suspicion in Southeast Asia. By linking JICA's functions with those of the new ADB institute, Tokyo may be able to secure multilateral acceptance of its development strategies, as well as some budgetary support from others with similar views." In short, Japan will use the research institute as an "honest broker" for extending the external reach of its developmental state ideas, just as the U.S. has long benefited from the research and teaching activities of the World Bank in projecting a free market agenda throughout the developing world. ◆*

14 Oxford Analytica, Asia Pacific: ADB Agenda, May 7, 1996.