

Foreword

The environmental and social impacts of modern gold mining can be profound. Consider some of the impacts that communities have faced from polluting gold mines over the last decade. In 1993 the Summitville gold mine in Colorado was abandoned by Galactic Resources Ltd., killing at least a 17-mile stretch of the Alamosa River with acid and cyanide pollution and leaving U.S. taxpayers with a \$170 million clean-up bill. In 1995, in Guyana, 860 million gallons of cyanide-laden mine waste poured into a major river from Cambior's Omai gold mine. In 1997, in Montana, the Zortman-Landusky gold mine was abandoned by Pegasus Gold Corporation after a series of cyanide spills and pollution problems, leaving state taxpayers with a likely multi-million dollar clean-up. In 1998, in Kyrgyzstan, a cyanide spill outside of the Kumtor gold mine resulted in hundreds of people falling ill and may have led to one or more deaths. This January, a massive cyanide spill from a gold mine in Romania contaminated over 150 miles of the Danube River and its tributaries. The unfortunate result was a massive fish kill. The drinking water supply for as many as two million people was affected. It will likely take years for this ecosystem to reestablish itself from the impacts of cyanide and heavy metals.

As a result of the troubled environmental record of modern gold mining, citizens around the world have begun to take action to block new gold mine proposals, particularly those in ecologically sensitive or culturally significant areas. In 1998, Montana citizens, frustrated with repeated cyanide spills, unreclaimed open pits, polluted water, and bankrupt companies leaving mines to be cleaned up at taxpayer expense, passed a ban on all new open pit cyanide process gold mines in the state. Community leaders in Turkey have waged a successful campaign to block plans for an open-pit gold mine in an ecologically and culturally sensitive region of the country. In the Czech Republic, campaigners are seeking to block a number of controversial gold mining projects. In Canada, the proposed Windy Craggy gold mine was blocked due to citizen opposition. In the U.S., the New World Gold Mine, proposed next to Yellowstone

National Park, was blocked due to fierce opposition. As we write, an environmental board in Washington State has rejected the proposed Crown Jewel gold mine due to its potential impact on water quality and quantity. Today, citizen-led efforts are underway to block a number of other proposed gold mines in the U.S.

This groundswell of public opposition to large-scale gold mining is ironically a result of the technical efficiency of many of today's operations. Over the past two decades, mine operators have developed a technology that is effective at recovering gold from very low-grade ores. The processes use massive equipment to dig huge open pits and use a cyanide solution to leach the gold out of the rock at relatively low cost. The result is that low-grade ores that would not have been mined a few decades ago are now economical. Yet mining this low-grade ore means that many of today's mines are massive operations that often leave behind devastating scars on the landscape. Add to this the industry's checkered environmental record (i.e., its history of cyanide spills and water pollution problems), together with the boom and bust cycle of many mining projects, and you have a prescription for public outcry.

Despite all of this, many governments continue to subsidize and promote major gold mining projects. Over the years, environmental campaigners and taxpayer groups have attacked the direct and indirect subsidies that governments provide to the mining industry through land-giveaways, royalty deals, tax breaks, and other measures. Yet when it comes to gold, they have not adequately scrutinized what may be the most profound government favor to any industry, anywhere. Governments in the industrialized world hold a massive reserve of gold. By holding those reserves, and keeping what amounts to a vast oversupply of the metal off the market, they essentially promote the extraction of new gold. The net result is that governments promote environmental degradation and damage from gold mining by withholding gold from the market.

Historically, gold has had a financial, cultural, social and emotional significance that transcends its practical use as a metal. Gold has underpinned our financial system. It has led to war and much human suffering. A small band of gold is used by our culture to signify love and lifetime commitment. Yet many financial analysts and politicians alike speculate that with each passing year, gold is losing much of its allure and is becoming just a commodity like silver, platinum, or copper. It's too early to tell if this is the case.

There is, however, growing evidence that the negative impacts of this policy are economic as well as environmental. A number of governments have begun to sell significant portions of their gold reserves because they see this strategy as economically beneficial. Some analysts have predicted a substantial economic gain from the sale of even more government-held reserves.

As we saw with the debate over the proposed sale of gold reserves held by the International Monetary Fund to pay for debt relief, gold sales present a number of challenges. The rate of such sales could significantly impact the economies of developing nations and regional economies based on mining. Governments are in the process of making decisions about gold reserves that will profoundly affect the environmental, social, and cultural health of communities worldwide. While the outcome of this debate can not yet be predicted, it is imperative that campaigners and organizations working for environmental protection, preservation of cultures and communities, and human rights, play a role in this debate. With that objective in mind, Mineral Policy Center, Project Underground, and the Western Organization of Resource Councils have commissioned this paper.

For us, the critical policy questions are these:

Can the economic, environmental, social, and cultural costs of withholding vast stocks of gold from the market continue to be justified, and if so, what are the societal or economic imperatives that justify such a policy?

What are the potential negative social and economic impacts of continued central bank gold sales? Impacts could likely include job loss, worker dislocation, and societal stress. To what extent are these trends in mining the result of other market and political forces (such as mechanization and modernization) and to what extent are they driven by central bank decisions about gold sales?

How can such impacts be mitigated? At what rate should gold sales occur? What should be done with the proceeds from gold sales? Should funds be created to assist workers with dislocation and retraining? Would a global abandoned mine clean-up fund both create new jobs for mine workers and address a growing global environmental problem?

In closing, it may be instructive to consider an observation made by Stephen L. Sass in his book *The Substance of Civilization*: "Iron was once more valuable than gold. One of the most important technological revolutions of human history was triggered by the transformation of iron from a rare to a common or working metal."

Executive Summary

Gold, once the foundation of currencies worldwide, may be on its way to becoming just another commodity. Key to whether gold in the future is a worthwhile or worthless investment will be the decisions of national treasuries, central banks, and international institutions about whether to sell significant shares of their gold reserves. Already, such sales have happened, and others are planned. Thus central banks, rather than mining companies or gold buyers, may have the most influence over the future price of gold.

Central banks and international financial institutions hold more than 34,000 tons of gold. This is more than 13 times the annual production of the world's mines; if sold, these reserves could satisfy gold demand for more than 8 years (current demand is approximately 4,000 tons per year). Of this demand, 85% is typically used for jewelry.

According to some investment analysts who follow gold markets, since 1971 when the International Monetary Fund prohibited its member countries from using the gold standard, central bank-held gold reserves have been, "the spent fuel of an obsolete monetary system" (*Economist*, 1992). Central banks have, in fact, been slowly but steadily selling their gold holdings for three decades.

The United States, as the world's largest holder of gold reserves (8,600 tons), holds 54% of its reserves in gold. U.S. citizens deserve a voice in a broader public debate on the future of U.S. gold reserves, even from a purely financial perspective.

A case can be made that current U.S. policies are costing U.S. taxpayers billions. At market prices, the value of U.S. gold reserves has declined from \$215 billion to \$73 billion since 1980 – not to mention the interest that might have accrued from placing the proceeds in other investments such as government securities. For example, Australia, which sold two-thirds of its gold holdings two years ago, has recently calculated that it has earned US\$506 million more since the sale than it would have if it had held on to its reserves. A Swiss commission has estimated that every Swiss household

could earn \$450 per year if that nation were to invest its gold holdings in foreign-government bonds; the Swiss National Bank, once among the world's greatest gold enthusiasts, is likely to begin sales of up to half their reserves this spring.

At the same time that we lose money on our "investment" in gold, U.S. taxpayers have subsidized the gold mining industry through the giveaway of billions of dollars of gold ore and public lands. We also continue to pay out millions of dollars in federal and state-financed clean-ups of mining disasters or abandoned mines. Mining-dependent communities, at the mercy of global markets, may end up holding the bag for clean-up if the mining company goes bankrupt; any major program of gold sales should address not only clean-up costs associated with abandoned and bankrupt mines, but also the development of programs for worker transition and alternative forms of economic development for communities that have relied heavily on gold mining.

There is growing evidence that the fundamental oversupply of gold, along with continued, even accelerated, gold sales by central banks, may continue to exert downward pressure on gold prices. For both environmental and economic reasons, the American public may well question the wisdom of continuing to hold very large reserves of an asset that has been losing value for decades. Since the U.S. holds the largest reserve of gold in the world, the U.S. stands to lose the most if other governments sell first.

This paper explores these issues and makes the case for a public debate on this issue.

Introduction

1999 was a remarkable year for gold. The metal's price plummeted in late spring, spent the summer at its lowest levels in 20 years, spiked to 2-year highs in the fall, and finished the year almost exactly where it started. The turmoil in the gold markets drew headlines worldwide, put several well-known mining companies out of business, and threatened the continued viability of many more. It also invited widespread speculation about the metal's long-term value. At the end of 1999, gold's price, adjusted for inflation, was approximately the same as it was in the spring of 1973. Between January 21, 1980, when it reached its all-time high, and the end of 1999, the price of gold fell from \$850 to \$290 per ounce, a 66 percent drop. In inflation-adjusted dollars, gold lost over 80 percent of its value over the same period.¹ (See Figure 1.)

In discussions of the future of gold, one issue has drawn particularly serious attention: the possibility that a significant share of the vast quantity of gold in the vaults of national treasuries, central banks, and international institutions might be sold. All told, governments and international institutions hold more than 34,000 tons of gold. The amount is nearly one-fourth of all the gold ever mined, and nearly as much as has been mined since world gold production began to boom in the early 1980s. It is more than thirteen times the annual production of the world's mines, and, if sold, it could satisfy current global demand for more than eight years.²

Given their size in proportion to the market, the fate of these vast reserves of government gold is likely to be the most important factor determining the long-term price of the

metal. Though it is very difficult to divine the true causes of short-term market fluctuations, the threat of major sales by governments appears to have played a large part in the sharp drop in gold prices seen in mid-1999. The so-called Washington Agreement to limit the sale of gold by European countries and their central banks also seems to have played an important part in the abrupt increase in gold prices later in the same year.

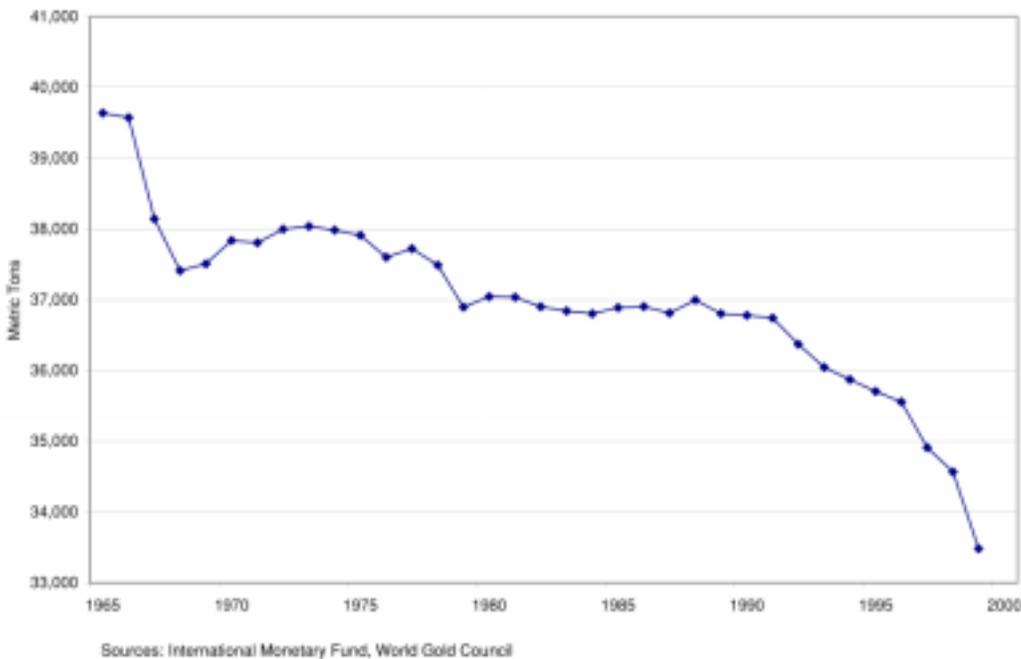
Mining companies and others interested in maintaining higher prices for gold have reason to be worried about government sales of the yellow metal. Many nations now appear increasingly inclined to sell some of their reserves. Taken together, the world's governments sold an average of 9 tons per year in the eighties; in the nineties they sold an average of 219 tons per year (See Figure 2.) The Washington Agreement allows 14 European countries and the new European Central Bank (ECB) to sell a combined total of 400 tons per year over the next five years. Switzerland, the United Kingdom, and the Netherlands already have announced plans to sell nearly that much gold. Taken

Figure 1: Gold Prices, 1968-99
(Monthly Average of London Afternoon Fix)



Source: Gold prices from Kitco Precious Metals (<http://www.kitco.com>); real prices based on GDP implicit price deflators from U.S. Department of Commerce, Bureau of Economic Analysis, online at <http://www.economaig.com>.

Figure 2: Government and International-Institution Gold Holdings, 1965-99



pre-eminent position under the now-defunct Bretton Woods monetary system. At market prices, the value of U.S. gold reserves has declined from \$215 billion to \$73 billion since 1980, not including significant sums in interest that could have been yielded if the money had been lent out through government securities. At the same time, the U.S. government has continued to promote domestic gold mining, pursuing policies that have resulted in the giveaway of billions of dollars' worth of gold ore and public lands. Current U.S. policies also result in inadequate environmental protections and the continued cre-

ation of hazardous waste sites at former mines, many of which taxpayers will be forced to clean up.⁴

together, those plans add up to a significant increase in annual sales of government gold.³

Whether or not the United States should continue to hold current levels of gold reserves and continue to subsidize gold mining on public lands, with often devastating environmental costs, is an important public policy question. And this is not simply an academic debate. For evidence of this one only has to look at the state of Montana, where citizens have grown frustrated with gold mining's impacts and passed a ban on all new gold mines that use cyanide technology.

Missing from the debate have been environmentalists, people who live in communities affected by mining, taxpayers, and public-interest advocates. Their absence is lamentable: the future price of gold will have serious implications for the environment and the economy, and for the long-term balance sheets of the nations that hold large quantities of the metal.

The executive branch has the authority to sell U.S. gold reserves, but the current administration has never indicated any interest in doing so. In fact, the United States has not sold any of its gold since the 1970s. It is time for a public debate on these important economic, social, and environmental questions.

The citizens of the United States, in particular, deserve a broader public debate on the future of gold reserves. The U.S. government holds the world's single largest reserve of gold, 8,170 tons, the legacy of the dollar's

Bank Vaults: the World's Biggest Potential Gold Mines

The largest potential gold mine in the United States is in a rather surprising place: New York City's financial district, a few blocks from Wall Street. In an ultra-high-security vault at the Federal Reserve Bank of New York, 80 feet underground, sit more than 8,600 tons of gold. In fact, the vault holds more gold than the proven reserves of all U.S. gold mines combined. At current market prices, the gold in the vault is worth more than \$75 billion.⁵

Like other commodities, gold's price is set by the interaction of supply and demand. But what is unique about gold is the enormous amount of the metal already extracted, much of it sitting idle in bank vaults. Once mined, most gold remains in use, or in storage, virtually forever. The annual production of the world's mines—about 2,500 tons—is tiny in comparison to above-ground supplies. Governments and investors, combined, hold an estimated 59,000 tons of high-purity gold, 14,000 tons more than the proven reserves of all mines worldwide. Another 63,000 tons of gold exists above ground in the form of jewelry, and 15,000 tons more in other forms, such as dental gold and electronics. Most of this gold could be melted down, purified, and sold at considerably lower cost than newly mined gold.⁶ (See Figure 3.)

In recent years, worldwide demand for gold has been about 4,000 tons per year. Most of this—85 percent—is used for jewelry. About 12 percent is used for industrial applications, such as electronics and dental fillings, and the balance is bought by investors. Investment demand can vary significantly from year to year, depending on perceived trends in the price of gold, and conditions in financial and currency markets. Overall gold demand grew by about 25 percent from 1996 to 1998, but it is likely that a large share of the growth was caused by a more than \$100-per-ounce price decline over that period. It is unclear whether underlying demand for gold—the amount that is purchased at any given price—has actually been increasing. Demand actually fell slightly in 1999, even though the average price was lower than in the previous year.⁷

More gold is actually purchased for investment than published statistics indicate. "Investment" gold listed in statistical publications usually includes only the gold purchased by investors who buy gold bars or coins through formal markets. Much of the demand for gold jewelry comes from Asia and the Middle East, where it is often purchased as an investment. In recent years, India has surpassed Western countries as the world's leading market for gold. Indian women, in particular, buy gold jewelry, because they have traditionally been denied the right to hold other forms of property. The gold jewelry sold in the Middle East and Asia is usually made of very pure gold, whereas that marketed in America and Europe is usually alloyed with baser metals, and sold more as an adornment rather than an investment.⁸

As stated previously, governments now hold enough gold to supply current demand for more than eight years. Adding in the reserves held by investors, who hold an estimated 24,000 tons, there is enough high-purity gold in storage to cover current demand for 14 years—without a single ounce of mine production. This is in stark contrast to other commodities, for which available stocks are usually measured in days, not years, of demand. For example, there is usually no more than a 50-90 day supply of rice, wheat, and corn in reserve, worldwide. Even for silver, which is held as an investment more often than other widely traded commodities, less than a year of demand of high-purity metal is usually in storage at any time.⁹

The impact the sale of stored gold could have on the markets is probably significantly understated by simple calculations of how many years of demand could be filled by existing reserves, because less than ten percent of annual gold demand is permanently consumed. In other words, most of the gold sold this year could also be sold again next year. The real question is how large a circulating stock of gold the world's markets can absorb at a given price. For the last twenty years, the gold markets have exchanged—over and over again—a pool of gold that has grown slowly (at the rate that new mining exceeded consumptive use).

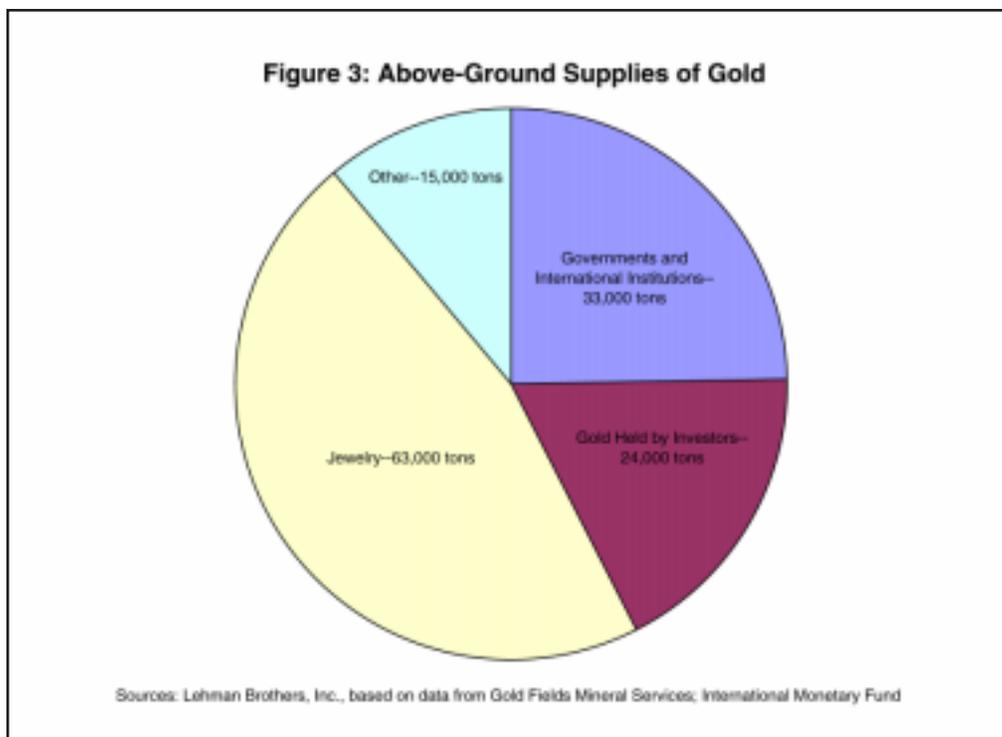
If governments, which largely have kept their gold out of the market, sell off much of what they hold, then the pool of gold in circulation might increase by a third, or even more. An increase in supply of this magnitude could drive down the price of gold to levels much lower than any seen since the end of the modern gold standard.¹⁰

The events of 1999 suggest that gold prices are likely to be high and stable only when investors believe that most of the gold in storage will remain out of the market. This was a safe assumption when the gold in central bank vaults was held to back currencies, but 28 years after the end of the gold standard, the gold market has entered uncharted territory. Governments assembled their gold stocks during the century and a half when the world's major currencies were backed by gold. When the badly ailing international currency regime that originated with the Bretton Woods Agreement finally collapsed in 1971, the modern gold standard came to an end. Under that regime, exchange rates had been fixed relative to the U.S. dollar, whose value until 1971 was defined as equivalent to 13.7 grains of pure gold. Thus, the price of gold was defined as \$35 per ounce. The end of the old system meant, essentially, the end of gold as the world's official money. When the dust settled, most major countries adopted a system of floating exchange rates, with no link to gold. In 1978, the International Monetary Fund (IMF) adopted a rule that no member country could tie the value of its currency to gold. Since then, central-bank-held gold reserves have been, as the *Economist* put it in 1992, "the spent fuel of an obsolete monetary system."¹¹

Unlike nuclear reactor wastes, however, this "spent fuel" can be sold. Whether it will be has not been, generally, the subject of public debate. In most countries, the long-term management strategy for national gold

reserves has been a closely guarded secret, as are most of the inner workings of treasury departments and central banks. Recently, however, the debate over bank policy has been spilling over into the political arena. For example, in a move that foreshadowed the Washington Agreement to limit European gold sales, central bankers at the August 1999 meeting of the Group of Ten (the gathering of the world's most powerful industrial countries) criticized the Bank of England for selling gold, warning that the action might pressure other countries to follow suit.¹²

Notwithstanding the Washington Agreement, a significant percentage of investors appear still to suspect that gold from national reserves may enter the market in larger and larger quantities. As Lehman Brothers observed earlier this year, "that the other 30,000 tonnes of central bank gold is going to sit idle while the Swiss are selling half of theirs seems like a very low probability scenario." While the agreement may prevent any other large sales by European countries for the next five years, many observers are skeptical that it will do anything more than put off such sales. As gold specialist Ted Arnold of Prudential Bache argues, "there's too much gold in central bank vaults," and the agreement is just a temporary reprieve.¹³



From Money to “the Dullest of Dud Investments”

The move by some central banks to sell most of their gold raises fundamental questions. For more than 2000 years, gold has been virtually synonymous with money in most cultures. Until recently, gold coins, which first appeared around 550 BC, usually have been regarded as the most reliably valuable form of money. The modern “gold standard,” under which (originally) countries issuing paper banknotes pledged to exchange them for a given quantity of gold on demand, prevailed for many of the world’s most important currencies for about 150 years. It is easy to forget, however, that many other commodities have served as money during human history—some of them for thousands of years—and many of them are no longer very valuable. What is the value of gold, now that—at least according to the rules of the IMF—it is just another commodity? Cowry shells were money once, too, but a vault full of seashells doesn’t buy much today.¹⁴

What distinguishes money from mere commodity? In modern history, governments and the international agencies they charter have become the arbiters of exchange value. Perhaps the most instructive historical example is that of silver. Silver was also money for thousands of years, but it was demonetized by the United States and by Germany in the 1870s. Silver formerly used for currency flooded into the market for the metal at the same time mine production was increasing, and silver’s value plummeted. It took 90 years for silver prices to return to their previous level, in real terms. Many observers now believe that gold is in the midst of a similar transition from money to commodity, and that gold prices are likely to continue their long-term decline, perhaps never to recover. Lehman Brothers, one of the world’s largest investment firms, has referred to this as “reverse alchemy”—the transformation of gold into a base metal—and has issued three major reports arguing that the process is already underway.¹⁵

Because of gold’s extremely long history as money, its transition to a commodity, if that is what is occurring, might take longer than the transitions of other former

currencies. Given the amount of gold that could be released into the market, and the relatively small proportion of gold demand from industrial uses, it could take a very long time for gold prices to recover—if they ever do. In an interesting parallel to the history of silver, mine production of gold has increased sharply in the last two decades, just as governments have begun to sell unprecedented amounts of gold from their reserves. If gold prices undergo a similar long-term decline, the investment market for gold is likely to shrink dramatically. Even if the long-term payoff might be substantial, very few investors are willing to wait 90 years for their money.

At least for now, much of the investment community clearly has already given up on gold. Commodities expert Ted Arnold has referred to the yellow metal as “the dullest of dud investments.” So-called “gold funds” have nearly all either closed down or shifted much of their investments out of gold metal and mining firm equities. As mentioned earlier, Lehman Brothers, a noted U.S. investment firm, has since 1997 argued that gold is in the process of losing its status as a precious metal. The Lehman reports systematically refute 14 major arguments routinely made by advocates of investment in gold, referring to them as “Golden Myths.”¹⁶ (See Table 1.)

Desirable investments offer two possible kinds of return: annual yield (interest or dividends) and appreciation in value. Gold has done poorly in both categories for nearly two decades. It can be lent, with the interest payable in gold, but the gold lease rate is usually considerably below market interest rates, and has been only one to two percent for most of the last decade. Gold also costs money to store and keep secure. And, as discussed earlier in this paper, gold prices have plummeted since the early 1980s. Nearly all of the increase in gold’s value that occurred after the end of the gold standard has now evaporated.¹⁷

When you add up the long-term depreciation and the lack of annual yield, gold’s recent investment performance appears truly dismal. According to the Lehman

Brothers reports mentioned above, an investment in gold made ten years ago has lost 30 percent of its value, and the opportunity cost of investing in gold—the amount lost relative to other possible investments over the same period—has been even greater. An investment in long-term government bonds made ten years ago would have more than doubled, and an investment in U.S. stocks would have grown by more than four times.¹⁸

Table 1. "14 Golden Myths"

1. Gold is a hedge against inflation.
2. Gold is a proven asset.
3. The price of gold will rebound since gold is great for portfolio diversification.
4. In inflation-adjusted dollars, the price of gold is cheap. Therefore, its price must rise.
5. Gold has very positive demand/supply fundamentals.
6. Jewelry demand is growing rapidly.
7. Central banks will not sell gold in favor of foreign currency denominated assets.
8. The gold price will rebound once a European Central Bank gold policy is established.
9. Central bankers will not damage a market in which they are the largest shareholders.
10. There will be a rush to gold when global financial markets finally show some weakness.
11. Short covering will drive the price of gold higher.
12. The price of gold will surge as investors seek protection from potential Y2K chaos.
13. It is against the law for the United States to sell any of its gold.
14. Gold isn't really a commodity.

Source: Lehman Brothers, Inc., *Reverse Alchemy: The Commoditization of Gold Continues* (New York: 1999).

Gold used to play a major role in the investment market as an inflation hedge and as a "quality" investment that would hold its value in times of adversity in bond and equities markets. Recently, however, other investments have begun to fill these niches. For example, the U.S. and at least half a dozen other governments now sell inflation-indexed bonds, which hold their value no matter how much the currency in which they are denominated becomes inflated. Derivatives and other sophisticated financial instruments offer investors methods of hedging against negative movements in markets for stocks and other investments. With high confidence in the stability of the dollar, investors now increasingly purchase government bonds.¹⁹

While it remains to be seen whether gold's decline as an investment is a permanent phenomenon, investors have shown very little interest in it even during major recent market upheavals. Lehman Brothers points out that a host of negative events over a two-week period in 1998—which included the "collapse of Long Term Capital Management, the largest one-day decline in the Dow (500 points), crushing collapse in corporate debt markets, ongoing impeachment of the U.S. president, an ongoing military conflict in the Middle East, and a nearly 20 percent collapse in value of the dollar versus the yen"—led only to a four percent increase in the price of gold. The Lehman Brothers report goes on to ask, "if this was insufficient to stimulate and sustain material investment interest in gold, it is a fair question to ask: what will?"²⁰

Some observers ascribe much of the recent decline in gold prices to a generational shift. Virtually everyone who worked in the investment industry under the gold standard (which came to an end 28 years ago) is now 50 years old or older and will reach retirement age in 15 years. The younger financial analysts who are now rising to senior positions may have a very different view of gold than their predecessors, according to some commentators. They never worked under the gold standard, and have watched gold's value decline steadily for nearly two decades. Whether they will continue to ascribe to gold a unique status in the world financial system is anyone's guess.²¹

Until recently, governments, by hanging on to the bulk of their gold, have prevented what might otherwise have been wholesale flight from the gold markets, propping up the price of the metal since the end of the gold standard. In effect, they have served as a de facto cartel for gold producers, locking up a large share of the available supply of the metal—just as the De Beers cartel keeps diamond prices high by keeping much of its huge stock of gems out of the market. Whatever their motivation for doing so, governments—and taxpayers—have paid dearly for their willingness to play this role. According to University of Michigan professor Stephen Salant, the United States has lost tens of billions of dollars through its decision not to sell off its gold after the end of the gold standard. U.S. taxpayers could have been earning interest on the proceeds ever since, by lending it out in the form of government securities. Instead, they have not earned a dime, while the value of the gold in Fort Knox has tumbled.²²

The large potential returns from alternative investments add up to a powerful economic argument for governments to sell gold. For example, Australia, which sold two-thirds of its gold holdings two years ago, recently announced that it had made \$506 million (US) more in income since the sale than it would have had it held on to its reserves. Andy Smith, an economist formerly with the London office of Union Bank Switzerland, estimated in late 1997 that Switzerland could earn more than \$450 a year per household if it were to invest its gold holdings in foreign-government bonds. Smith also estimated that if all nations' gold reserves were switched into such bonds, they would earn almost \$20 billion a year. This would still be true even if the sales substantially depressed the price of gold. For example, if large sales cut the price of gold by an additional \$100 per ounce, sellers who invested in government bonds would still make up that loss in value in about ten years, at current interest rates.²³

Government Gold Sales Accelerate

Until about three years ago, there was little evidence that governments were considering selling much of their gold. The institutions sold the metal in relatively small quantities, and at a slow pace. Governments' net gold holdings were fairly stable from 1980 until 1991. During this time, several countries, most notably Belgium, Canada, and the Netherlands, sold off significant amounts of gold, but these sales were very nearly balanced by purchases by other countries.²⁴

Since 1992, however, total government holdings have fallen every year. And events since early 1997 have made it clear that some governments are now willing, if not eager, to sell gold. It now seems quite plausible that the same generational shift that appears to be occurring in the investment community may be happening in the institutions that manage the world's largest holdings: finance ministries and central banks. Any one of the events listed in Table 2—with the possible exception of the Swiss plan to sell half the country's reserves—would probably not have had a significant effect on the price of gold. But taken together, they constitute a sea change. Net sales of gold by governments have increased significantly, and much larger sales are now planned. Added to this is the first-ever hint that Federal Reserve officials might be seriously contemplating the possibility of sales by the United States, the holder of the world's largest reserve.²⁵ (See Table 2.)

Three gold sales appear to have had a serious impact on the gold markets since 1997. The Netherlands announced early that year that it had already completed the sale of 300 tons of gold. The country had sold 400 tons of gold in 1993, reducing its holdings 40 percent during the '90s.

The next sale announced was a major bombshell: Australia, one of the world's major gold-mining countries, sold two thirds of its reserves in July 1997. The government stated that "it was no longer appropriate to hold a significant part of [Australia's] international reserves in the form of gold," and Australian Treasurer Peter Costello caused a national uproar with his state-

ments to the effect that gold is a poor investment. The share prices of gold-mining firms tumbled. Australia was the second major gold-mining country to sell the metal in large quantities. Canada has had a program of sales underway for many years.²⁶

Most recently, the United Kingdom sent the gold markets reeling in May 1999, by announcing that it planned to sell 415 tons of gold, more than half its holdings. The government offered justifications for its proposed sales similar to those of the Australian government, to the effect that other types of reserves are preferable to gold. Although the United Kingdom was the country that originated the gold standard, many commentators seemed to find the move reasonable. For example, rather than assailing the move as a threat to the stability of Britain's currency—as it would likely have done in a previous era—the *Financial Times* registered surprise that the U.K. did not choose to sell all of its reserves, calling gold a "lousy investment."²⁷

The extent of the U.K. sale's impact on the gold market can only be understood in the context of other developments, however. Many journalists and analysts interpreted the action as an attempt by the British government to sell its gold before larger holders could do so. In particular, they theorized, the U.K. wanted to sell its gold before a proposed International Monetary Fund sales plan got underway, and before the beginning of large proposed sales by Switzerland. U.S. President Bill Clinton proposed in March 1999 that the IMF sell off about five percent of its gold holdings (about 160 tons) in order to fund debt relief through the Heavily Indebted Poor Countries (HIPC) initiative. The IMF holds more gold than any country except the United States and Germany, and has not sold any of its reserves since the 1970s. Two years ago, a similar proposal was stopped by strong opposition from the German government, but the election of new German Chancellor Gerhard Schroder helped revive the idea. Clinton's proposal was quickly seconded by French President Jacques Chirac. In June 1999, leaders of the Group of Seven countries endorsed an expanded IMF sales plan, twice the size of Clinton's original proposal.²⁸

Table 2. Central Banks and Gold: A Chronology, 1997-99

- January 1997—The Netherlands announces that it has sold 300 tons of gold, about one quarter of its holdings.
- March 1997—The Swiss National Bank announces a plan to sell some of Switzerland’s gold to fund international humanitarian initiatives.
- June 1997—An economic paper co-authored by a U.S. Federal Reserve Bank economist is released; the paper concludes that there would be major economic benefits if central banks were to sell their gold reserves.
- July 1997—Australia announces that it has sold 167 tons of gold, two thirds of its holdings.
- October 1997—A high-level government commission recommends that Switzerland sell 1300 tons of gold, almost half of its reserves.
- June 1998—The new European Central Bank announces its decision to hold no more than 15% of its reserves in gold.
- March 1999—U.S. President Bill Clinton proposes that the International Monetary Fund sell 160 tons of gold, 5 percent of its holdings, to help fund debt relief for poor countries; he is quickly seconded by French President Jacques Chirac.
- April 1999—Swiss voters amend their constitution to sever permanently the link between the franc and the country’s gold holdings, removing an important obstacle to gold sales.
- May 1999—The United Kingdom announces that it plans to sell 415 tons of gold, more than half of its reserves.
- June 1999—Group of Seven leaders endorse the IMF’s proposal to sell 320 tons of gold, twice the amount originally proposed by President Clinton.
- September 1999—ECB and other European central banks announce the Washington Agreement to limit their gold sales over the next five years to a total of 400 tons per year.
- December 1999—The Netherlands announces that it plans to sell another 300 tons of gold.

The specter of a rush by governments to sell their gold was probably a principal cause when the price of gold plummeted by more than \$30 an ounce in the wake of the U.K. announcement. The chief reason that many observers believe much larger gold sales will be forthcoming is the move by Switzerland to sharply reduce its holdings. In October 1997, a panel of experts commissioned by the Swiss government recommended that the country sell half of its reserves, the world’s fourth largest. The psychological impact on the gold markets of such a possibility was huge. Lehman Brothers observed that “this proposal, by itself, has permanently changed the dynamics of the gold market.” Switzerland

was the last major country to abandon the gold standard, and Swiss monetary officials have historically been among the world’s greatest gold enthusiasts. Many observers believe that if the Swiss abandon gold the rest of the world will be quick to follow.²⁹

Although the Swiss sales are not yet a certainty, the process is well underway. In April 1999, Swiss voters amended their constitution to make it possible to sell some of the country’s gold reserves. Additional political steps will be required before the sales occur, possibly including a citizen referendum, but the vice-chairman of the Swiss National Bank’s governing board has

Table 3. Top Ten Official-Sector Holders of Gold

Rank	Country/Institution	Holdings (tons)	Share of Total Reserves (percent)
1	United States	8170	54
2	Germany	3469	34
3	IMF	3217	NA
4	France	3024	41
5	Switzerland	2590	40
6	Italy	2452	50
7	Netherlands	982	46
8	Japan	754	2
9	European Central Bank	747	15
10	United Kingdom	640	16

Source: World Gold Council, based on IMF statistics for January 2000.

repeatedly stated that he believes that sales will happen without a referendum. Sales might begin as early as this spring.³⁰

The Swiss commission's recommendation, along with the statements of the British and Australian governments about their sales, makes it clear that many government officials now feel that their countries hold more of their reserves in gold than is appropriate. The 1998 decision by the new European Central Bank (ECB) to hold a maximum of 15 percent of its reserves in gold may represent a new consensus among some central bankers on an appropriate level of gold reserves. The figure was determined after extensive negotiations among the new bank's members. The major member countries of the ECB hold much higher proportions of gold in their reserves. If the European monetary union succeeds, much of those reserves may eventually be regarded as surplus. The ECB's member states hold, in total, about 12,000 tons of gold—more than is held even by the United States.³¹

If the ECB's 15-percent level is an accurate indicator of what central banks now believe is the appropriate level of gold holdings, it provides some insight into the

scope of possible future sales. Industrial countries have traditionally held a third or more of their international reserves in gold. The United States, for example, holds more than half of its reserves in gold. A long-term move by all the major holders of gold toward this 15 percent level would involve the sale of about 15,000 tons of metal. At \$250 per ounce, these sales would yield about \$120 billion; at \$150 per ounce, about \$70 billion. If such sales occur, there clearly will be tension between the natural conservatism of central bankers, who generally try to avoid major market disruptions, and the obvious advantages to those who sell first.³² (See Table 3.)

Another indicator that governments may be increasingly willing to sell gold is the recent trend toward valuation of gold reserves at market prices. Governments have traditionally viewed gold reserves as “undervalued assets”—assets to be held, not managed—listing them on their books at nominal prices far below market rates. The United States, for example, values its gold reserves at \$42 per ounce, far below recent market prices of \$280-300. These book values are a relic of the “official price” of gold, which was enforced with large-scale government buying and selling under the gold

standard, but is now irrelevant to the markets. The new accounting rules of the ECB have pushed European governments into valuing their gold at market rates. Some observers believe this represents a significant change in expectations for central banks. The value of assets priced at market rates is tracked on a regular basis, making them much more likely to be managed for performance. When a large piece of a country's assets is seen to be performing poorly, the incentive grows to swap it for investments that yield greater returns.³³

One of the most interesting portents of future gold sales in recent years was the publication, in June 1997, by the U.S. Federal Reserve Board, of a discussion paper that suggested that governments and the world economy would be much better off if all countries sold off their gold immediately. One of the paper's central arguments was that it is economically inefficient to continue to mine gold when above-ground sources are available. It also pointed out that the U.S. government would benefit substantially from selling its gold, even if other governments did not sell, and that early sellers would probably benefit more than those who sell later. While the paper clearly does not represent Federal

Reserve Board policy, it is interesting to note that one of the four authors is an economist with the Board. It is significant that U.S. sales are being discussed in a government forum, since the country has not sold, or considered selling, any of its reserves since the mid-1970s.³⁴

In the wake of the U.K.'s first gold auction, in July 1999, the gold markets were awash in rumors that other governments were already selling gold. Many observers speculated that a rise in the gold lease rate indicated that some governments were taking gold out of lease for sale. Given the Washington Agreement, that now seems unlikely, but the agreement will allow the major sales plans already announced—most notably, the Swiss and British sales—to proceed. Some observers have even condemned the agreement as simply a ploy to prop up the price of gold, so that governments can get more when they do sell. After the agreement expires, in five years, it is unclear whether the European banks will prohibit further sales, continue to allow 400 tons of sales per year, or allow banks to sell as much as they wish. Given the potential impacts, however, it does seem unlikely that the decision will be made in such secrecy as it was in 1999.³⁵

The Costs—and Benefits—of Lower Gold Prices

For the last several years, the gold mining industry has waged a desperate struggle to put a positive spin on developments in the gold markets, and, in particular, on the issue of central bank holdings. Since 1997, the World Gold Council has published a quarterly newsletter, “Gold in the Official Sector,” which features relentlessly positive assessments of the current gold markets. The Council has also sponsored conferences in New York, London, and Davos, Switzerland (during the World Economic Forum, an annual gathering of the world’s economic and political elite), giving the spotlight to the few investment analysts, financiers, and government officials who remain bullish on gold. The group even resorted to placing ads in major newspapers, touting gold’s long-term value—a tactic that backfired, when the ads drew ridicule from the press.³⁶

Up until the Washington Agreement, the gold industry appeared to have lost its propaganda war. In 1998 and 1999, stories about the ongoing commoditization of gold appeared in most of the major American and English newspapers, in major economic and financial magazines, on the B.B.C. and U.S. National Public Radio, and via many other media outlets. Several major investment firms made it clear that they do not recommend putting money into gold. Most importantly, the price of gold continued to fall.³⁷

While not abandoning their earlier efforts, the industry tried a new tactic in 1999: emphasizing the negative economic effects of gold’s falling price, and attempting to organize political opposition to sales of central bank and IMF gold. It is impossible to know whether these efforts were a principal motivation for the Washington Agreement to limit sales. The European central banks may well have been acting primarily out of self-interest, to prop up the then rapidly-declining market value of their gold reserves. Nonetheless, the agreement’s signatories have admitted that the mining industry’s lobbying influenced them. The banks might well have acted, in part, to aid mining firms and mining-dependent economies hurt by low gold prices.

Ironically, however, the agreement may have hurt some of those that many might have thought it would help, at least in the short term. While higher prices followed the announcement of the agreement, the impact on the mining sector was surprisingly mixed. Some firms reaped major benefits from the increase in prices; others actually suffered major losses. It turned out that, as the *Independent* of London put it, “not even gold’s staunchest defenders believed the precious metal’s value would ever recover.” Some of the world’s largest gold-mining companies had played the gold futures markets, in effect placing large bets that gold’s price would continue to decline.

Mining companies frequently “hedge” against downward price movements by agreeing to sell some of their future gold production at a price fixed in advance. Some mining companies went beyond normal hedging, however, promising to sell more gold at low prices than they could actually deliver from their own production. They paid dearly for such speculative behavior, by having to purchase gold on the spot market—at much higher prices—to meet their obligations under futures contracts and forward sales agreements. Some firms—most notably, Ashanti Goldfields of Ghana, one of Africa’s largest gold producers—were hit so hard by the price increases that they teetered on the verge of bankruptcy. The multiple impacts that are likely to result from central bank intervention in the gold markets underscore the need for a broader public role in such decisions.³⁸

Notwithstanding the effects of the sharp spike in prices in the fall of 1999, it is declining metals prices that have had the most substantial negative impacts on the mining industry, and those who work for it, in recent years. Many mines with high production costs have closed, and others may in the future. According to Lehman Brothers, the average cash cost of production for the gold mining industry was about \$262 per ounce in early 1998; by the beginning of 1999, the figure was down to \$200. Cost reductions have come not only through mine closures, but also through cutting labor, and “high-grading,” the practice of carving out a

mine's richest ore first. High-grading can sharply reduce the life of a mine. Of course, if the price of gold meets only a mine's cash costs, investors receive no return on equity. Few new mines will open with such economics. If the price of gold stays down, many more mines are likely to close, and many new projects will not open. Those new mines that do open are likely to use the cheapest technologies, such as cyanide heap-leaching, which are the most environmentally damaging. They may also be tempted to cut corners on environmental protection, worker safety, and other costs of doing business.³⁹

Low prices already have had negative impacts on local economies in some of the places where the mining industry operates. By far the hardest hit is South Africa, where most gold mining is done deep underground, at very high cost. There are 300,000 gold miners in South Africa, and about three million more people who depend on them for income. The mining industry did not miss this opportunity to point out that its interests coincide with those of millions of poor people. The World Gold Council launched a crusade against selling IMF gold to fund debt relief for poor countries, arguing that low gold prices will hurt poor countries more than the debt relief would help. Of course, the mechanization of much of the South African gold industry, and the attendant job loss, is driven by global economic realities, and would probably be underway to some degree, regardless of current trends in the price of gold.⁴⁰

The gold industry was successful in heading off IMF sales of gold, though that success probably had more to do with U.S. domestic politics than with the potential impact on African gold producers. Whether the gold industry can succeed in preventing further acceleration in sales of government gold, however, is highly questionable. Since economic problems in areas that are highly dependent on gold production are already a reality, gold-producing countries would be wise to consider ways to reduce dependence on mining. Not only the very real possibility of low gold prices over the long run, but the inherently cyclical, boom-and-bust nature of the mining industry make propping up the price of gold seem a quixotic quest. Even today, too many mining operations represent a one-time infusion

of jobs and capital into a community rather than a sustainable, long-term economic base. Mining-related ghost towns stand in mute testimony to this around the world.

Any major program of gold sales should address issues of long-term dependence on the industry, and help fund alternative economic avenues for dependent communities. And while it may make sense for the IMF to sell some of its reserves, the HIPC initiative may not be the best use of the funds. Many non-governmental organizations have criticized HIPC, arguing that it will offer poor countries neither genuine debt relief nor a sustainable, long-term economic footing. Ironically, HIPC assistance is likely to be tied to structural adjustment programs, which often lead to increased investment in and dependence on mining and other industries of questionable sustainability.⁴¹

The negative effects of declining gold prices are real and should be raised, but there is an element missing from the current public debate over gold sales. At the moment, almost no one is tallying the possible benefits of lower gold prices, which could be significant. They include several hundred billion dollars in net economic benefits described in the paper the Federal Reserve published in 1997. That paper argued that money spent on current, economically unnecessary gold mining, and for artificially high-priced products containing gold, could be put to other, more productive uses. The same paper acknowledged other sizable benefits that it did not quantify, including reduced damage to the environment. The authors of the paper have since commented that the benefits of selling gold would far outweigh the costs, and have recommended that sales programs include efforts to ameliorate the human costs.⁴²

In the United States, it would clearly also make sense to dedicate a portion of the proceeds from selling gold reserves to cleaning up the thousands of abandoned, polluted mine sites that dot the American landscape. The Mineral Policy Center estimates that there are 557,650 abandoned hardrock mine sites in the U.S., and that the cost of remediation at these sites will range from \$32.7 to \$71.5 billion. In addition, the precipitous fall in gold prices has contributed to the clo-

sure of a number of major gold mines, some of which will require expensive clean-up. For example, in the state of Montana, regulators have predicted that it will cost \$8 million to clean up the abandoned Zortman-Landusky gold mine, a Pegasus property that opened in 1979. Pegasus went bankrupt in early 1998. However, an independent review conducted for a local community group has predicted that taxpayer costs could be as high as \$90 million.⁴³

It is worth noting that mine clean-up is fairly labor-intensive, and offers a productive occupation for displaced gold miners, who already possess many of the skills and knowledge required for the job. That is why environmental organizations frequently push to use mining royalties for clean-up of abandoned mines. There is a strong argument to be made that some of the proceeds from government gold sales should be used for a mine reclamation/worker transition fund.

Toward a Broader Debate on Gold Reserves

The time is ripe for a full-fledged public debate over government gold holdings in the United States and other countries. This debate may be particularly timely in the U.S., since as a result of its central role in the Bretton Woods system, the country holds the world's single largest reserve of gold—and stands to lose the most if other governments sell off their gold first. It is time to consider whether it might be appropriate to sell all or part of government held gold reserves, and to include in the debate those whose interests would be affected, from mineworkers to environmental groups to taxpayer advocates.

Some considerations in making this decision are:

- Which countries are planning to sell their gold?
- Will a delay allow other countries to sell first, at higher prices?
- What have countries gained by the sales that have already occurred?
- Why has the Clinton Administration advocated the sale of IMF gold, but not U.S. holdings?
- What is an appropriate level for gold in the United States' reserves, and those of other countries?
- How much would such sales yield, and what would be the payback period if the proceeds were invested?
- How much would be saved in future costs of mine site clean-up, avoided giveaways of public mineral reserves, and avoided mining-firm tax breaks?
- Should countries begin to value their gold reserves at market prices?

- If sales are appropriate, when would be an appropriate time to begin sales, and over how long a period should they continue?
- What kinds of liabilities are governments acquiring as low prices cause gold mining firms to go bankrupt and abandon their mines?
- What portion of the proceeds might be dedicated to job training and other assistance for displaced gold miners?

It seems unlikely that governments will sell off all the gold in their reserves. While it appears to be a poor long-term investment, gold remains a liquid asset and a negotiable medium of exchange. But it also seems quite clear that if governments now were creating their reserve portfolios from scratch, they would choose a much smaller role for gold—as, for example, the new European Central Bank has done.

A full accounting of the global costs—human, environmental, and financial—of today's gold economy makes it clear that it is time to reassess issues ranging from the level of gold reserves, to mining industry subsidies, to environmental policies. The release of stored gold to the market could save billions in opportunity costs for the governments who hold the metal, and could sharply reduce the additional environmental and human impacts from gold mining.

Why, indeed, should we destroy more land and water to wrest gold from the earth, when we could mine the vaults first?

Notes

- ¹ Prices from Kitco, Inc., website (<http://www.kitco.com>); real prices calculated by the author based on GDP implicit price deflators from U.S. Department of Commerce, Bureau of Economic Analysis, online at <http://www.economic.com>; note that Figure 1 shows monthly average prices, and thus does not reveal the single-day high of \$850 per ounce; note that the weight of gold is always measured in troy ounces, not the avoirdupois ounces used for most transactions in the United States.
- ² Central bank holdings from International Monetary Fund (IMF), *International Financial Statistics*, various issues; about 135,000 tons of gold has been mined in human history, according to GFMS (Gold Fields Mineral Services) estimates, cited in Lehman Brothers Inc., *Reverse Alchemy: The Commoditization of Gold Continues* (New York: 1999); about 35,000 tons of gold have been mined since 1981; since 1980, annual world gold production has doubled, to an estimated 2,400 tons per year; calculations by the author, based on statistics in U.S. Geological Survey (USGS), *Mineral Commodity Summaries* (Washington, D.C.: annual, various years), and USGS, *Minerals Yearbook* (Washington, D.C.: annual, various years); all statistics in this report are in metric tons.
- ³ Government sales of gold from the IMF, *International Financial Statistics*; Jonathan Fuerbringer, "Gold Soars But Its Future Is Cloudy," *New York Times*, September 28, 1999; "Gold Comfort," *Economist*, Oct. 2, 1999; Lehman Brothers, *Reverse Alchemy: The Commoditization of Gold Accelerates* (New York: 2000); Bank of England, "Restructuring the UK's Reserve Holdings: Gold Auctions," press release, May 7, 1999; Patrick Chalmers, "Gold Stripped of Rank In Reserves Policy," *Reuters News*, May 7, 1999; Alan Cowell, "Britain Plans to Sell 58% of Its Bullion," *New York Times*, May 8, 1999; Robert Chote and Gillian O'Connor, "Gold Hit By Move to Slash \$6.5bn Reserves," *Financial Times*, May 8, 1999; "Gold: Emptying the Vaults," *Financial Times*, May 8, 1999; Richard Adams, "Gold: Status Under Spotlight," *Financial Times*, May 10, 1999; "Body Blow for Gold," *Mining Journal*, May 14, 1999; "Gold Prices At 20-Year Low," BBC News online, May 24, 1999; "Dutch Central Bank's Gold Plans Hit Bullion Price," *Financial Times*, December 7, 1999; "Dutch Sale Dashes Hopes of Gold's Recovery," *Financial Post* (Toronto), December 7, 1999.
- ⁴ U.S. gold holdings from IMF, *International Financial Statistics*, April 1999; drop in value calculated by the author based on London gold prices from Kitco Precious Metals, as of December 30, 1999; for information on U.S. giveaways of land and minerals, see Mineral Policy Center, *Golden Patents, Empty Pockets* (Washington, D.C.: 1994).
- ⁵ The New York Federal Reserve vault is the world's single largest storehouse of central-bank gold, holding about one-fourth of such reserves; most of the metal it holds does not belong to the United States, but is held in trust for foreign governments and international institutions; the United States keeps most of its gold at the U.S. Bullion Depository, an ultra-high-security Treasury Department installation adjacent to Fort Knox, near Radcliff, Kentucky, and the rest is kept at a variety of Treasury sites around the country; Federal Reserve Bank of New York (FRBNY), *The Key to the Gold Vault* (New York: 1998); according to the U.S. Geological Survey, *Mineral Commodity Summaries 1999* (Washington, D.C.: 1999), total U.S. mine reserves of gold (metal judged to be economically recoverable at the time of the estimate) were an estimated 5,600 tons in 1998.
- ⁶ All statistics from GFMS, cited in Lehman Brothers, *Reverse Alchemy Continues*, except proven reserves of gold, from USGS, *Mineral Commodity Summaries*, and central-bank reserves, from IMF, *International Financial Statistics*; the GFMS and IMF estimates of central-bank reserves differ slightly.
- ⁷ Gold demand from GFMS, cited in Lehman Brothers, *Reverse Alchemy Accelerates*; prices from Kitco.
- ⁸ GFMS, cited in Lehman Brothers, *Reverse Alchemy Continues*; gold purchases by Indian women from Shubada Deshpande, "Golden Bangles, Wedding Handcuffs: Women & Gold Consumption in India," (Berkeley, Calif.: Project Underground, 1999).
- ⁹ GFMS, cited in Lehman Brothers, *Reverse Alchemy Continues*; Joseph G. Haubrich, "Gold Prices," economic commentary, Federal Reserve Bank of Cleveland, March 1, 1998; grain reserves from Lester R. Brown et al, *Vital Signs 1999* (New York: W. W. Norton, 1999).
- ¹⁰ Lehman Brothers, *Reverse Alchemy Continues*.
- ¹¹ The Bretton Woods Agreement, concluded in 1944 at an international conference in New Hampshire, also established the International Monetary Fund and the World Bank; U.S. citizens were not allowed to buy gold from the 1930s until 1974; a "two-tiered" price system for gold was established in 1968, with the official price, used for transactions between governments, fixed at \$35 per ounce, and the market price allowed to float; prior to that, the United States and other governments intervened in the gold markets when necessary to maintain the price at \$35; Bretton Woods from John M. Lucas, "Gold," in *Nonferrous Metal Prices in the United States Through 1988* (Washington, D.C.: U.S. Bureau of Mines, 1991); "Central-Bank Gold: Melting Away," *Economist*, April 4, 1992.
- ¹² "Central Banks Criticise UK Decision to Sell Gold," *Financial Times*, August 16, 1999; the Group of Ten actually includes eleven countries: Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States.
- ¹³ Lehman Brothers, *Reverse Alchemy Continues*; "Gold Digs Its Own Grave," *The Independent*, Oct 10, 1999.
- ¹⁴ Glyn Davies, *A History of Money from Ancient Times to the Present Day* (Cardiff: University of Wales Press, 1996)
- ¹⁵ Cowry shells were used as money in Africa and Asia as early as 1200 BC, and persisted as money in some places well into the twentieth century; the Chinese character for money originally represented a cowry shell; Glyn Davies, *A History of Money from Ancient Times to the Present Day*; private holdings of gold, demonetization of silver from Lehman Brothers, *Reverse Alchemy Continues*, and from "Losing the Midas Touch," *Economist*, Nov. 22, 1997; the two other reports by the investment firm were Lehman Brothers, *Reverse Alchemy: The Commoditization of Gold* (New York: 1997), and Lehman Brothers, *Reverse Alchemy: The Commoditization of Gold Accelerates* (New York: 2000).
- ¹⁶ Arnold quoted in Edward Heathcote Amory, "The Gold Rush in Reverse," *Spectator* (London), Aug. 22, 1998; Arnold was a senior gold specialist with Merrill Lynch at the time he was quoted; he now works for Prudential-Bache in London; Lehman Brothers Inc., *Reverse Alchemy*; Lehman Brothers Inc., *Reverse Alchemy Continues*.
- ¹⁷ Gold prices and lease rates from Kitco Precious Metals.
- ¹⁸ Lehman Brothers Inc., *Reverse Alchemy Accelerates*.
- ¹⁹ Christopher Farrell, "Inflation-Indexed Bonds Deserve Respect – Maybe Yours," *Business Week Online Daily Briefing* (<http://www.businessweek.com>), January 28, 2000; U.S. Department of the Treasury, Office of Public Affairs, "Statement of Treasury Secretary Robert E. Rubin: Inflation Indexed Bonds Press Conference," press release, Washington, D.C., May 16, 1996; Lehman Brothers Inc., *Reverse Alchemy Continues*; Amory, "The Gold Rush in Reverse"; Floyd Norris, "Who Needs Gold When We

- Have Greenspan?" *New York Times*, May 4, 1999; Alastair Blair, "Gold Turns To Dust," *Management Today* (London), September 1997; Richard W. Stevenson, "The Dollar Standard Spinning Gold Into Dross," *New York Times*, Dec. 28, 1997.
- ²⁰ Lehman Brothers Inc., *Reverse Alchemy Continues*.
- ²¹ Rafiq Ahmed, "Gold Needs a Miracle," *African Business* (London), February 1998; "Central-Bank Gold: Melting Away," *Economist*; Stevenson, "The Dollar Standard"; Cliff Edwards, "Gold Sinks, EU Eyes New Standard," *Lexington Herald-Leader*, November 27, 1997.
- ²² Rich Miller, "Experts: U.S. Should Sell Its Gold," *USA Today*, July 12, 1999; "Losing the Midas Touch," *Economist*; Dale Henderson and Stephen Salant, "A Note on Government Gold Policies," *Board of Governors of the Federal Reserve System* (Washington, D.C., 1997); Dale W. Henderson, John S. Irons, Stephen W. Salant, and Sebastian Thomas, "Can Government Gold Be Put to Better Use?: Qualitative And Quantitative Effects of Alternative Policies," *International Finance Discussion Paper* Number 582, Board of Governors of the Federal Reserve System, Washington, D.C., 1997.
- ²³ James Regan, "Australia Central Bank Profits From '97 Gold Sales," *Reuters*, August 31, 1999; Reserve Bank of Australia, Report and Financial Statements—1999 (Sydney, 1999); "Losing the Midas Touch," *Economist*; Smith now works for Mitsui in London; statement on returns from investments in bonds based on calculations by the author.
- ²⁴ Gold holdings from IMF, *International Financial Statistics*, various issues, and World Gold Council, *Gold in the Official Sector* (occasional), various issues.
- ²⁵ Sources for box are: World Gold Council, *Gold in the Official Sector* (occasional), various issues; Henderson and Salant, "A Note on Government Gold Policies"; Henderson et al., "Can Government Gold Be Put to Better Use?"; Robert Chote, "Debt: Relief for Poor Nations to Extend," *Financial Times*, June 14, 1999; Jean-Pierre Roth, speech at the 22nd Annual FT World Gold Conference, London, June 14, 1999.
- ²⁶ World Gold Council, *Gold in the Official Sector*; Bank of England, "Restructuring the UK's Reserve Holdings"; Chalmers, "Gold Stripped of Rank In Reserves Policy"; Cowell, "Britain Plans to Sell 58% of Its Bullion"; Chote and O'Connor, "Gold Hit By Move to Slash \$6.5bn Reserves"; "Gold: Emptying the Vaults," *Financial Times*; Adams, "Gold: Status Under Spotlight"; "Body Blow for Gold," *Mining Journal*; "Gold Prices At 20-Year Low," *BBC News*; Michael Santoli, "Precious Little Upside," *Barron's*, July 14, 1997; Lotte Chow, "Golden Shake-Out," *Far Eastern Economic Review*, July 31, 1997; Office Of The Treasurer, Commonwealth Of Australia, "Reserve Bank of Australia Official Sales of Gold," Press Release No. 75, July 3, 1997; Robert Pringle, "One Year After the Reserve Bank of Australia Sales," *International California Mining Journal*, September 1998.
- ²⁷ Bank of England, "Restructuring the UK's Reserve Holdings"; Chalmers, "Gold Stripped of Rank In Reserves Policy"; Cowell, "Britain Plans to Sell 58% of Its Bullion"; Chote and O'Connor, "Gold Hit By Move to Slash \$6.5bn Reserves"; "Gold: Emptying the Vaults," *Financial Times*; Adams, "Gold: Status Under Spotlight"; "Body Blow for Gold," *Mining Journal*; "Gold Prices At 20-Year Low," *BBC News*.
- ²⁸ *Ibid.*; the Group of Seven includes the United States, Germany, Japan, France, United Kingdom, Italy and Canada.
- ²⁹ Lehman Brothers Inc., *Reverse Alchemy Continues*; Andrew Serwer, "Burned by Gold," *Fortune*, March 16, 1998; Norris, "Who Needs Gold When We Have Greenspan?"
- ³⁰ "Finance and Economics: Tarnished Gold," *Economist*, April 24, 1999; David DeRosa, "Molten Metal," *Canadian Business*, June 11, 1999; Jean-Pierre Roth, speech at the 22nd Annual FT World Gold Conference, London, June 14, 1999; Jean-Pierre Roth, "Introductory Remarks," End-of-year Media News Conference, Zurich, December 10, 1999.
- ³¹ All central banks hold reserves of foreign currencies, gold, and other liquid assets, which they use to conduct international transactions and to stabilize currency markets; the large amounts of gold in such reserves are largely a legacy of the gold-standard era, when central banks would actually buy and sell very large amounts of gold in the open market in order to keep the metal's price at the officially decreed level; Lehman Brothers Inc., *Reverse Alchemy Continues*.
- ³² Calculations by the author, based on IMF statistics from World Gold Council (http://www.gold.org/Gra/Statistics/Off_hold.htm), May 1999.
- ³³ "A Golden Bombshell," *The Banker* (London), June 1997; "The Bundesbank Bites Back," *Economist*, May 31, 1997; "Pricing Central Bank Gold," *Gold in the Official Sector* (World Gold Council), April 1999; "Euro Take-Off," *Gold in the Official Sector* (World Gold Council), January 1999.
- ³⁴ Henderson and Salant, "A Note on Government Gold Policies"; Henderson et al., "Can Government Gold Be Put to Better Use?"
- ³⁵ O'Connor, "Gold: Lowest Price in 20 Years"; Chalmers, "Gold World Abuzz That UK Not Sole Seller"; "Gold: Is It Too Early To Rejoice?" *Africa News Service*, October 25, 1999.
- ³⁶ World Gold Council, *Gold in the Official Sector* (occasional), various issues; Peter A. McKay, "These Ads' Missing Element? Solid Gold Timing," *Wall Street Journal*, June 21, 1999.
- ³⁷ "Gold: Emptying the Vaults"; "Finance and Economics: Tarnished Gold"; Norris, "Who Needs Gold When We Have Greenspan?"; Serwer, "Burned by Gold"; Amory, "The Gold Rush in Reverse"; Jonathan Peterson, "Gold's Mystique Tarnished Anew by IMF Sale Plan," *Los Angeles Times*, July 7, 1999; Kathleen Schalch, *Morning Edition, National Public Radio*, May 10, 1999; "Gold Prices At 20-Year Low."
- ³⁸ "Gold Digs Its Own Grave," *Independent* (London), October 10, 1999; Alex Brummer, "Central Bankers Drop a Golden Clanger," *Guardian* (London), October 7, 1999; Lehman Brothers, *Reverse Alchemy Accelerates*.
- ³⁹ Lehman Brothers Inc., *Reverse Alchemy Continues*.
- ⁴⁰ Humbulane Tshikalange, National Union of Mine Workers (South Africa), private communications, Grass Valley, Calif., June 3-5, 1999.
- ⁴¹ "Tarnish on Gold Sales," editorial, *San Jose Mercury-News*, August 11, 1999.
- ⁴² Henderson and Salant, "A Note on Government Gold Policies"; Henderson et al., "Can Government Gold Be Put to Better Use?"; Rich Miller, "Experts: U.S. Should Sell Its Gold," *USA Today*, July 12, 1999.
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Mineral Policy Center (MPC) is a nonprofit organization dedicated to protecting communities and the environment from the destructive impacts of mineral development in the U.S. and worldwide. MPC provides assistance to communities and grassroots groups; publicizes the environmental, social, cultural, and economic impacts of mining; and works to reform government policies and improve corporate practice.

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Project Underground is a nonprofit, environmental and human rights organization. We support communities threatened by the oil and mining industries worldwide, as they resist environmentally and culturally destructive mineral extraction operations. We also expose the human rights and environmental abuses of corporations in these industries.

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