

McKinsey Global Institute



December 2009

An exorbitant privilege? Implications of reserve currencies for competitiveness

Discussion paper

The McKinsey Global Institute

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Preface

Debate about the future of the dollar as the global reserve currency, and the nature of global exchange rate arrangements, has intensified over the past year. This debate is in part driven by ongoing global financial imbalances and the sharp movements in exchange rates caused by large cross-border capital flows. Most interest has focused on whether the dollar's reign as the global reserve currency is coming to an end, which alternative currency or system could emerge in its place, the levels of different exchange rates, and whether mechanisms should be put in place to dampen currency volatility. But to our knowledge, nobody has asked a more fundamental question, which sheds new light on these issues. What are the benefits—and costs—of being a global reserve currency?

This is the early focus of new research by the McKinsey Global Institute (MGI) into exchange rates and their impact on the competitiveness and growth of economies and companies. *An exorbitant privilege? The implications of reserve currencies for competitiveness* is a discussion paper setting out our first attempt at an assessment of the costs and benefits of reserve currency status. Our hope is that this work serves as a contribution to the ongoing debate on these important issues. However, this discussion paper is not our last word on this analysis. Instead we are publishing it now to initiate a discussion. We would be delighted to receive feedback and comments that would help us strengthen our analysis. If you have comments, please email us at reserve_currencies@mckinsey.com.

Richard Dobbs, a director of MGI based in Seoul, and David Skilling, an MGI senior fellow in Singapore, led the research, working with San Francisco-based MGI fellow Wayne Hu. Susan Lund, MGI's head of research, James Manyika, a director of MGI based in San Francisco, Charles Roxburgh, a director of MGI based in London, and Martin Baily, senior academic advisor to MGI and a senior fellow at the Brookings Institution, provided valuable advice. We thank them, as well as Janet Bush, senior editor at MGI, and Rebeca Robboy, MGI's external communications manager.

The research has profited from conversations with external experts and we would like to thank William Cline at the Peterson Institute for International Economics; Richard Cooper, Maurits C. Boas Professor of International Economics, Harvard University; and Doug Rediker, Director of the Global Strategic Finance Initiative at the New America Foundation. However, these people should not be seen as responsible for any of the analysis or views contained in this document.

The publication of discussion papers is a new approach for MGI: traditionally we have focused on completing a full study before publishing the results. However, this work is in every way aligned to the fulfillment of MGI's mission to help global leaders understand the forces transforming the global economy, improve company performance, and work for better national and international policies. As with all MGI research, we would like to emphasize that this work is independent and has not been commissioned or sponsored in any way by any business, government, or other institution.

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Executive summary

Over the past several years, substantial cross-border capital flows have generated large swings in exchange rates that only partly reflect underlying economic fundamentals. These exchange rate movements have had a substantial impact on the competitiveness of countries and of companies. Increased exchange rate volatility and uncertainty about future movements are also complicating company investment decisions. So the way in which the global exchange rate system evolves is an important issue for boards and executives.

To inform a perspective on the likelihood of any change in the reserve currency system and the potential implications for companies and national competitiveness, the McKinsey Global Institute (MGI) has undertaken an initial analysis that attempts to size the costs and benefits to the United States and the countries of the Eurozone of being a global reserve currency and how these costs and benefits might evolve.¹ We hope that this will help to answer questions such as whether it is likely that the United States will continue to support the dollar as the global reserve currency. Will the euro emerge as a dominant reserve currency? Is a fundamental redesign of the global exchange rate system toward a system based on a basket of currencies likely or needed, as some observers have suggested? And what will be the impact on competitiveness if particular changes were to happen?

In the 1960s, France's then finance minister Valéry Giscard d'Estaing argued that the United States enjoyed an "exorbitant privilege" because the dollar was the global reserve currency. Today, it is not clear that the United States enjoys much of a privilege at all. Indeed, MGI's preliminary analysis shows that the benefits from reserve currency status are relatively modest. In a "normal" year for the world economy, we estimate that the net financial benefit to the United States is between about \$40 billion and \$70 billion—or 0.3 to 0.5 percent of US GDP (Exhibit E1).

So what are the specific costs and benefits of reserve currency status? First, there are additional revenues from seigniorage—the interest-free loan generated by issuing additional currency to nonresidents who hold US notes and coins. This generates a financial benefit of an estimated \$10 billion.

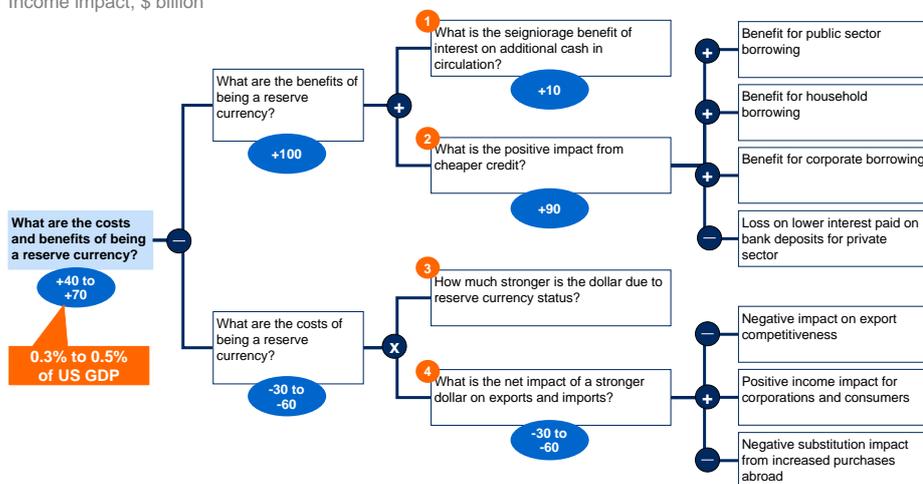
Second, the United States government, companies, and households are able to raise capital more cheaply due to very large purchases of US Treasury securities by foreign governments and government agencies. We estimate that these purchases have reduced the US borrowing rate by 50 to 60 basis points over the past few years. This lower cost of capital benefits the government, households, and corporate borrowers (although it harms US savers). We estimate that this net borrowing benefit amounts to about \$90 billion.

1 This discussion paper sets out our first attempt at an assessment of the costs and benefits of reserve currency status. The paper is not our last word on this analysis but we are publishing it now to initiate a discussion. We would be delighted to receive feedback and comments that would help us strengthen our analysis. If you have comments, please email us at reserve_currencies@mckinsey.com.

Exhibit E1

In a normal year, the dollar’s status as a global reserve currency provides a modest net benefit to the United States

United States, normal conditions, July 2007–June 2008
Income impact, \$ billion



Note: The impact is calculated relative to a scenario in which the dollar is not held as a reserve currency at all (i.e., a zero baseline).

SOURCE: McKinsey Global Institute analysis

However, there is a large downside to the United States acting as a magnet to the world’s official reserves and liquid assets. Greater inflows of foreign capital mean that the dollar exchange rate is higher than it would be without reserve currency status. Independent estimates suggest that the dollar was overvalued by around 5 to 10 percent in 2008. This harms the competitiveness of US exporting companies and companies that compete with imports, and we estimate that it imposes a net financial cost of \$30 billion to \$60 billion. This cost increases by about \$30 billion for every 5 percent movement in the exchange rate.

There are sharp distributional effects associated with reserve currency status. The US government is the single largest beneficiary due to lower interest payments on public debt together with seigniorage revenue. Household and corporate borrowers also benefit. But reserve currency status imposes costs on exporters and sectors that compete with importers.

In a “crisis” year—such as the year to June 2009—we estimate that the impact of reserve currency status fell to a range between a net cost of \$5 billion and a net benefit of \$25 billion (Exhibit E2).

This reduction in the benefits from reserve currency status for the United States was caused by an additional 10 percent appreciation in the dollar relative to its trading partners due to the “safe haven” properties of the dollar. This appreciation further reduced the competitiveness of the exporting and import-competing sectors in the United States, with a negative financial impact of an incremental \$55 billion. This loss of competitiveness is likely to lead to reduced employment in the range of 400,000 to 900,000 jobs in these sectors. A lower cost of capital due to increased net foreign purchases of US government bonds partly offset the exchange rate effect.

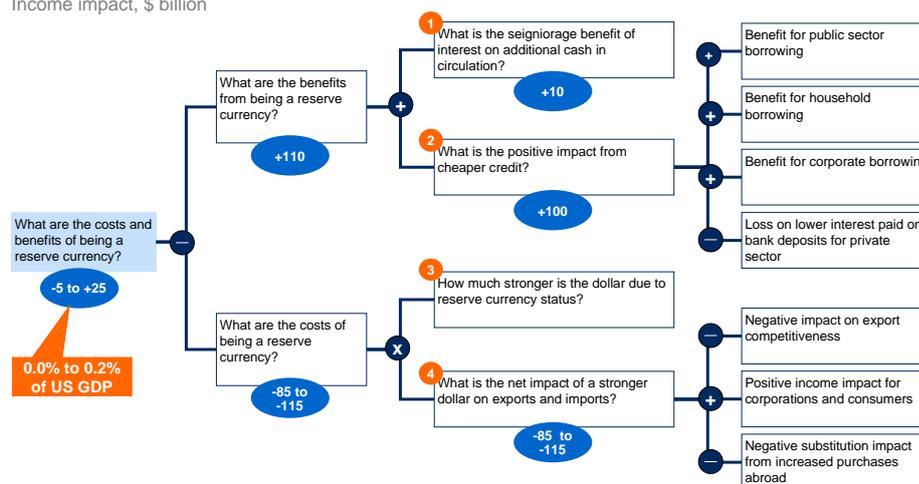
What might happen to the costs and benefits of reserve currency status in the coming years? A decline in the net benefits of reserve currency status to the United States is plausible. True, the benefit from the lower cost of capital will grow larger as the US

government’s borrowing requirement expands. But the United States could face increased economic and employment costs if maintaining primary reserve currency status constrained the depreciation of the dollar needed to stimulate growth. Which of these effects proves stronger is uncertain. It may be that other, qualitative factors will prove more significant in determining the balance of costs and benefits.

Exhibit E2

In a crisis year, the net benefit of reserve currency status to the United States is smaller

United States, crisis period, July 2008–June 2009
Income impact, \$ billion



Note: The impact is calculated relative to a scenario in which the dollar is not held as a reserve currency at all (i.e., a zero baseline).

SOURCE: McKinsey Global Institute analysis

The United States enjoys significant privileges, many observers would argue, in terms of the geopolitical and strategic benefits from being the center of the global economic and financial system and the policy autonomy that status confers. Specifically, the United States has been able to run larger fiscal deficits and a looser monetary policy because it has been subject to fewer market disciplines.

But the large accumulation in recent years of foreign-held US debt has created a potentially significant responsibility that could constrain future US policy autonomy. Specifically, foreign government holders of US debt will be more forceful in arguing for tighter US monetary and fiscal policy to protect the value of their assets.

However, the relatively modest benefits derived from the dollar’s status as the primary reserve currency must make it less likely that the United States will be willing to pursue policies to meet the implicit responsibilities associated with that status. The costs of maintaining a stable currency through tighter monetary and fiscal policy may become more onerous given the economic challenges that the United States faces. The United States may question whether its implicit obligations to the global system outweigh its desire to run relatively loose monetary and fiscal policies as a way of creating jobs and promoting growth.

And will the Eurozone want to assume a share of this responsibility? Our analysis shows that the small costs and benefits of the secondary reserve currency status of the euro broadly cancel each other out. Eurozone economies can borrow slightly more cheaply as a result of this secondary reserve currency status, but there are costs related to lower competitiveness as a result of the elevated exchange rate. And

if the euro were to become a more significant reserve currency over time, we estimate that these costs would increase.

We have modeled a range of reserve currency scenarios for the euro ranging from today's gradual trend of increasing prominence for the euro as a reserve currency to an accelerated trajectory in which the euro equals the standing of the dollar by 2020. In these scenarios, we estimate that the cost of borrowing will fall by perhaps 50 to 100 basis points and that the euro may appreciate by a further 10 percent compared with current levels. This exchange rate effect would have a substantial impact on the competitiveness of exporting companies in many Eurozone economies.

Given that European policy makers are concerned at today's euro exchange rate, the prospect of a permanently stronger euro is likely to be unattractive. Countries including Italy, Greece, Spain, and Portugal are already suffering from the euro's strength. And exporting countries such as Germany, which send more than half of their exports outside of the Eurozone, would also lose further competitiveness. Perhaps unsurprisingly then, the European Central Bank (ECB) is a supporter of the strong dollar policy. And in a November 2009 interview with *Le Monde*, ECB president Jean-Claude Trichet said that the euro was not designed as a global reserve currency.

With the jobs and growth imperatives dominating in the United States and the Eurozone, the main reserve currency issuers may be increasingly disinclined to play a leadership role in terms of policy settings that are consistent with global exchange rate stability. Rather, our analysis suggests that we may continue to see an "unmanaged" reserve currency system in which the United States and the Eurozone follow a hands-off approach—placing much greater weight on the domestic economic agenda in setting policy than on supporting the global system. So although the dollar is not going away as the dominant reserve currency anytime soon, there may not be a firm hand on the tiller.

In the context of a changing global financial system, with substantial global imbalances and reserve holdings as well as very large cross-border private capital flows, an unmanaged reserve currency system may increasingly cause problems. Indeed, such a system has the potential to contribute to greater exchange rate uncertainty and destabilizing shifts in cross-border capital flows that will be hard to manage for policy makers and businesses alike. The stepped-up government intervention we have observed in foreign exchange markets is a sure sign of stress. For companies, sharp movements in exchange rates have generated a significant redistribution of resources as, depending on the geography, companies gain or lose profits and market share.

Indeed, a global survey of executives conducted by McKinsey indicates that both the level of exchange rates and exchange rate volatility have a large, and growing, negative effect on profits and investment decision making. Some 21 percent of respondents report that exchange rate uncertainty has reduced their planned investment over the next two years. And 29 percent of respondents report that exchange rates have an "extremely" or "very" significant effect on company profits. 43 percent of respondents also expect increased levels of exchange rate volatility in the coming years. Only 21 percent of respondents expect exchange rate volatility to reduce.

In response to the heightened volatility in the system, there have already been several proposals for reforms based on the International Monetary Fund's (IMF) Special Drawing Rights (SDRs), which is in effect a basket of currencies, and for other more

negotiated exchange rate arrangements, that create a multipolar system that shares the burdens—and benefits—more broadly. And measures intended to curb excess currency volatility caused by large capital flows, such as the Tobin tax, have been suggested. Given the lack of financial benefit to the key reserve currency countries, it may be that there will be a growing constituency for reform to the current set of exchange arrangements.

We do not yet have a specific view on the most likely end-point. It may be that the current system is able to function tolerably well over the next decade or so. But like the executives in our survey, we believe that there is more uncertainty in the reserve currency system than today's dollar dominance and the lack of a clear near-term challenger might initially suggest.

In particular, the uncertainty about the behavior of the countries at the center of the reserve currency system may lead to greater volatility in exchange rates, and it is this prospect that should concern global businesses. Companies may argue that grand schemes about global financial architecture are the preserve of politicians and none of their business. But exchange rates that are substantially out of line with economic fundamentals coupled with currency volatility will generate real economic costs. Whether the world resolves the reserve currency issue or not is therefore very much the business of businesses.

1. Introduction

In the 1960s, France's then finance minister Valéry Giscard d'Estaing famously accused the United States of enjoying an "exorbitant privilege" because the dollar was the global reserve currency.² It has, indeed, been the conventional wisdom that reserve currency status confers substantial benefits on the issuer. However, there are both costs and benefits associated with being a reserve currency, and it is no longer clear that being a reserve currency is such an attractive proposition. The changes in these costs and benefits will have direct implications for how the reserve currency system will develop over the coming years.

To inform a perspective on the likelihood of change in the reserve currency system, and the potential implications for companies and national competitiveness, the McKinsey Global Institute (MGI) has undertaken an initial analysis that sizes the costs and benefits to the United States and the Eurozone of being a reserve currency and how these costs and benefits might evolve over time.³ To the best of our knowledge, this is new analysis.

Much attention has focused on factors that determine whether a particular currency will be in demand as a reserve currency—for example, whether the euro will grow in importance relative to the dollar. But in addition to considering the *demand* for the reserve currency, we believe it useful to think about the evolution of the reserve currency system on the *supply* side in terms of the incentives for reserve currency countries to set their fiscal and monetary policy to align with their reserve currency role. This has important practical implications because it will likely impact on the functioning and stability of the exchange rate system, as well as the competitiveness of companies and economies.

Indeed, over the past several years substantial cross-border capital flows have generated large swings in exchange rates that only partly reflect underlying economic fundamentals. These exchange rate movements have become a primary driver of changes in competitiveness for both companies and countries. For the United States, there has been a tight inverse correlation between dollar levels and exports. When the dollar appreciates, exports decline, and vice versa. Likewise, the recent appreciation of the euro has impacted many Eurozone companies. Eurozone companies suffered a 27 percent fall in profits in the third quarter, compared with only a 1.2 percent fall for European companies outside the Eurozone, according to ING research.

These effects on competitiveness are causing companies to change their investment plans, alter their production locations, and take other measures to protect against exchange rate movements. And governments are acting to protect national competitiveness. For example, Brazil has recently imposed a tax on portfolio inflows flooding into its currency, and several Asian economies are intervening aggressively to hold their exchange rates down against the dollar to maintain competitiveness. This clear relationship between exchange rate movements and competitiveness is the prime motivation for this early analysis of these reserve currency issues.

2 Throughout this paper, the dollar to which we refer is the US dollar.

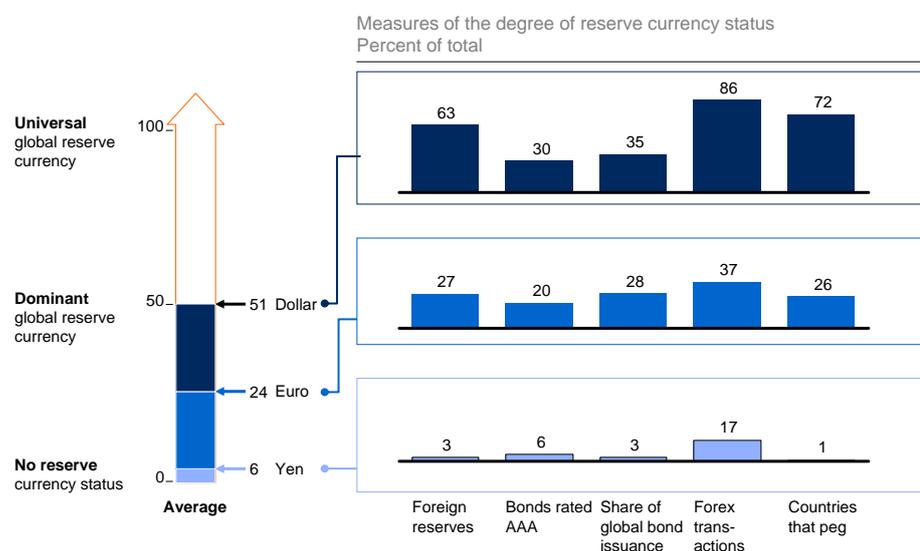
3 This discussion paper is being released to initiate a discussion. We would be delighted to receive feedback and comments that would help us strengthen our analysis. If you have comments, please email us at reserve_currencies@mckinsey.com.

2. The reserve currency system

On several of the key measures of a currency's global use, the dollar is clearly the world's dominant reserve currency (Exhibit 1). Some 63 percent of official foreign exchange reserves are held in dollars compared with 27 percent in euro, and 86 percent of all foreign exchange transactions involve the dollar. The IMF reports that 66 countries peg to, or manage, their exchange rate against, the dollar while 27 countries do the same with the euro. And oil and most global commodities are priced in dollars.

Exhibit 1

On several measures, the dollar is clearly the dominant reserve currency



Note: The overall ranking of reserve currency status is a simple average of the five measures.
SOURCE: COFER; Fitch Corporate Bond Report Q2 2009; Bank for International Settlements; International Monetary Fund estimates; Dealogic

Currencies do not become reserve currencies by fiat. Rather it is because they fill the roles demanded of a reserve currency and therefore attract flows of capital and become central to the execution of international transactions. A reserve currency offers a store of value—confidence that the currency will retain its value, so making it a safe place in which to invest official reserves or denominate contracts. It also acts as a medium of exchange that offers the ability to transact globally in the currency in an easy and low-cost way. Finally, the reserve currency is a unit of account—a widely held and recognized currency that can be used to denominate international contracts such as in oil and commodities and to invoice transactions.

As the currency of the largest economy historically—and an economy with deep and liquid financial markets—the dollar has been the obvious reserve currency in the post-World War II period. The geopolitical leadership role of the United States has contributed to dominance of the dollar in the world financial system since 1945.

Academic research has identified several factors that determine reserve currency status and these factors provide some insight into the speed with which currencies may become more prominent over time.⁴ They include:

- *Economic scale*—measured in terms of variables such as GDP and trade;
- *Transactions*—countries are more likely to hold reserves in currencies in which they conduct commercial transactions;
- *Financial market development*—liquidity across a wide range of instruments and across the yield curve;
- *Macroeconomic stability*—a low risk of inflation, currency depreciation, and other related forms of instability;
- *Network externalities*—the more people who use the currency, the more attractive it will become to others;
- *Nonfinancial reasons*—countries hold their reserves in particular currencies for strategic and political as well as financial reasons;
- *A plausible alternative reserve currency*—the existence of a plausible alternative will reduce the demand for the incumbent reserve currency.

Many of these factors change only slowly and there is therefore strong inertia in the reserve currency system. In other words, once a currency becomes widely used, there needs to be a compelling reason—particularly in the case of private usage—to move to an alternative. However, although inertia is a powerful force, history does show that changes in exchange rate arrangements have occurred on several occasions over the last century. Presumably, such changes will occur in the future too (see Box 1: “A recent history of reserve currencies”).

Box 1: A recent history of reserve currencies

At the start of the 20th century, sterling was the world’s dominant currency. But in the years after World War I, the dominance of sterling began to erode as economic power shifted across the Atlantic. For a couple of decades from the mid-1920s, there was effectively a dual reserve currency system with the sterling and dollar both playing important leadership roles. With the exception of a particularly volatile period in the 1930s, this dual currency reserve system worked tolerably well.⁵

However, by 1945 the dollar was very clearly the dominant currency and there was no other realistic candidate to place at the center of the Bretton Woods system of fixed exchange rates. The United States remained central to the global exchange rate system even after the United States effectively brought the formal Bretton Woods system to an end in 1971 because of domestic economic pressures.

Since the early 1970s, the world has had a system of largely floating exchange rates. The United States has continued to play a central role in the exchange

4 Menzie Chinn and Jeffrey Frankel, “Why the Euro will rival the Dollar,” *International Finance*, 2008.

5 Barry Eichengreen and Marc Flandreau, *The rise and fall of the dollar, or when did the dollar replace sterling as the lead international currency?* NBER Working Paper 14154, July 2008; Barry Eichengreen, *Sterling’s past, dollar’s future: Historical perspectives on reserve currency competition*, NBER Working Paper 11336, May 2005.

rate system because of its economic size and also because many countries have chosen to peg their currencies to the dollar, that is, to manage them using the dollar as a benchmark. And over the past decade, the United States has been the primary investment destination for the very substantial reserves that current account surplus countries have been generating. Indeed, despite some nervousness about the health of the US economy after the global financial crisis, the dollar continues to function as a safe haven, attracting substantial inflows of foreign capital over the past couple of years.

Over the past decade, the euro has become a key part of global exchange rate arrangements and is effectively a secondary reserve currency. There has been a gradual diversification of official reserves into the euro—its share of official reserves increased from 18 percent to 27 percent of official reserves between 2000 and 2009—and the private sector increasingly accepts the euro as a medium of exchange.⁶ The Eurozone economy now rivals the United States in size and has increasingly large, sophisticated, and liquid financial markets that investors can use to reduce their dollar exposure without incurring a significant cost.

However, there are structural issues that hinder the euro's progress toward more significant reserve currency status, not least the absence in the Eurozone of a single issuer of sovereign debt. The Eurozone is a monetary union but not a full fiscal and political union and issuers of the euro have different risk profiles. Within the Eurozone, many of the national financial markets lack scale and depth.

Although there is a widely held view that there is a gradual shift underway toward a dual reserve currency system, with the euro playing a more prominent role, this process may take at least another 10 to 15 years.⁷ It remains easier to identify liquid risk-free investment opportunities that are denominated in dollars than in euros.

So the dollar remains the world's primary reserve currency while the euro is a secondary reserve currency. Other currencies including the yen and sterling are much less widely held and used and do not play a meaningful reserve currency role. And they are not seen as likely to grow significantly in importance as reserve currencies in the future. One potential candidate to play this role in the future is the Chinese renminbi. Today, the renminbi is not fully convertible and China's financial markets are to date underdeveloped and not very liquid. But China is currently taking incremental steps to internationalize the renminbi through currency-swap arrangements and its limited use as a settlement currency. The consensus view is that it is likely to take several decades for this gradual process to come to fruition in the form of a Chinese reserve currency.⁸

6 *The International Role of the Euro*, European Central Bank, July 2009.

7 Richard Cooper, *The Future of the Dollar*, Peterson Institute for International Economics, Policy Brief 09–21, September 2009; Barry Eichengreen, "The Dollar Dilemma: The World's Top Currency Faces Competition," *Foreign Affairs*, September/October 2009; Adam Posen, "Why the euro will not rival the dollar," *International Finance*, 2008; Gabriele Galati and Philip Wooldridge, *The euro as a reserve currency: A challenge to the pre-eminence of the dollar?*, BIS Working Paper 218, 2006.

8 Melissa Murphy and Wen Jin Yuan, *Is China ready to challenge the dollar? Internationalization of the renminbi and its implications for the United States*, Center for Strategic and International Studies, October 2009.

As this discussion makes clear, reserve currency status is not a natural monopoly. But there are good reasons to have one currency as an international medium of exchange and unit of account because of the network externalities; it is more efficient to use the same currency as everyone else. This creates a powerful force toward inertia. But equally, diversification in reserves makes sense for central banks so as not to have all of a country's reserves invested in one currency. Indeed, about one-third of official reserves are held in currencies other than dollars. Although the dollar is dominant on most dimensions, history shows that dual reserve currency systems have existed in the past—and may do so again.

3. The costs and benefits to the United States

In this chapter, we describe our analysis of the distribution of costs and benefits of reserve currency status for the United States. Our analysis for the dollar finds that the United States derives a relatively modest net financial benefit from being the world's primary reserve currency.

We begin by assessing the costs and benefits of reserve currency status in a “normal” year—we use the period from July 2007 to June 2008—and then in a “crisis” year, which we define as July 2008 to June 2009 (see the appendix for a more detailed discussion of the methodology and data used). We then consider how these costs and benefits may evolve over the next several years.

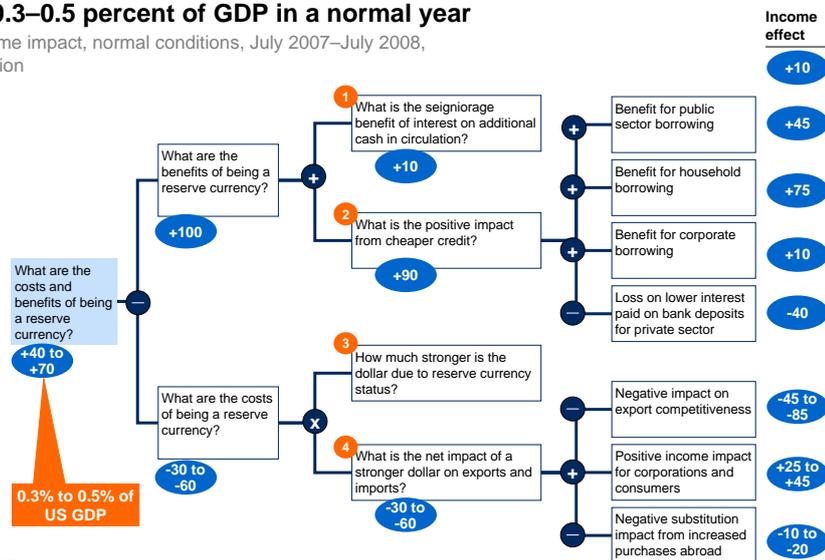
COSTS AND BENEFITS IN A NORMAL YEAR

In 2007/8, a relatively normal year, we estimate the net benefit from reserve currency status to be about \$40 billion to \$70 billion to US GDP, or 0.3 to 0.5 percent of GDP (Exhibit 2).

Exhibit 2

The United States obtains a small net benefit from reserve currency status of 0.3–0.5 percent of GDP in a normal year

Income impact, normal conditions, July 2007–July 2008,
\$ billion



Note: The impact is calculated relative to a scenario in which the dollar is not held as a reserve currency at all (i.e., a zero baseline).

SOURCE: McKinsey Global Institute analysis

The first class of benefit is from seigniorage income. The income generated by the US Federal Reserve from the reserve currency status of the United States is an estimated \$10 billion. This revenue results from the ability of the United States to receive an effectively interest-free loan on the currency it issues that is held by nonresidents. These nonresident holdings exist because of the reserve currency status of the United States, which means that the dollar is a medium of exchange outside of the

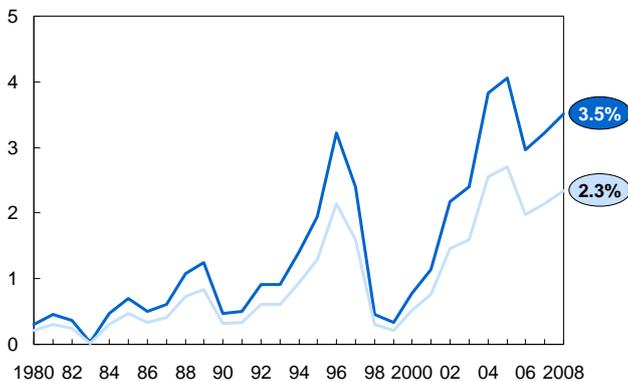
United States. Indeed, about half of the physical US notes and coins—around \$400 billion—are held overseas.

The second class of benefit is the cost of capital advantage obtained by borrowers in the United States as a consequence of foreign demand for dollar assets. In order to isolate the portion of this effect that is due to the reserve currency status of the United States, we calculate the cost of capital effect that is due to foreign government purchases of US government securities (e.g., by central banks, government investment companies, and so on). We estimate that the US cost of capital is lower by 50 to 60 basis points as a consequence of these purchases (Exhibit 3).⁹

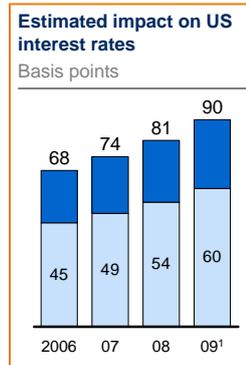
Exhibit 3

Significant foreign purchases of US Treasuries have reduced the US cost of capital

Estimated annual net foreign purchases of long-term US government bonds
 Percent of GDP



— Total foreign purchases of US government bonds (Treasury and agency bonds)
 — Estimated total foreign purchases of US government bonds by central banks and sovereign wealth funds
 ■ Interest rate impact used for reserve currency calculations



1 Based on Q1 and Q2 data.

SOURCE: US Department of the Treasury; McKinsey Global Institute Capital Flows Database; McKinsey Global Institute analysis

We apply this estimated cost of capital advantage to borrowing by the government (federal, state, and local), households, and companies and calculate that it generates an annual saving of \$130 billion. At the same time, of course, lower interest rates reduce the amount of interest income earned on deposits by households and companies, giving a negative income effect that we estimate at \$40 billion. Netting these two effects out, we arrive at a \$90 billion benefit from the lower cost of capital effect of reserve currency status (see Box 2: “The United States as a hedge fund” for a discussion of why we do not count the benefit of being able to invest this low-cost capital to earn higher returns).

9 Some may argue that this overestimates the benefit, as private investors will transfer capital out of the United States in response to these lower interest rates. However, given that the United States is a large net importer of capital, we believe that our estimates are broadly accurate.

Box 2: The United States as a hedge fund

For the past few decades, the United States has been able to generate an investment income surplus of a few percentage points of GDP even with a significantly negative net financial-asset position (of about \$2 trillion over the past few years).¹⁰ The United States has achieved this by accessing debt financing from abroad at relatively cheap rates and focusing its offshore investments in higher-yielding equities and foreign direct investment (FDI). Some analysts have included this amount in discussions of the reserve currency benefit.

For two reasons, we opted not to treat these “excess returns” as a benefit to the United States of being a reserve currency. First, non-reserve currency countries can (and some do) replicate a strategy of borrowing debt from offshore lenders and investing in higher-yielding foreign assets. It is not a strategy restricted to the United States. Second, the difference in returns should simply be an appropriate return for bearing additional risk. Thus, in risk-adjusted terms, there should not be an excess return. In 2008, this risk was evident when this strategy lost around \$1.5 trillion due to negative returns on foreign assets of around 20 percent.

In addition to these two benefits, there are also costs associated with the inflows of foreign capital that are associated with being a reserve currency. Specifically, the exchange rate of the reserve currency issuer is higher than it would otherwise be because of the increased demand for assets denominated in that currency. This additional demand arises both because the host country of the reserve currency becomes an investment location for official reserves and because the private sector uses the reserve currency to a greater degree in international transactions. This higher dollar exchange rate disadvantages US exporting firms as well as US firms that compete against imported goods, but benefits US consumers of imported goods and services.

Several studies have concluded that the dollar is overvalued. Recent analysis of “fundamental equilibrium exchange rates” by economists at the Peterson Institute estimated that the dollar was overvalued against fundamentals by 7.4 percent in June 2008.¹¹ This estimate is consistent with those found in other recent studies.¹² It is difficult to be precise about what proportion of this overvaluation is due to the reserve currency status of the dollar. We therefore opt to use a range of 5 to 10 percent overvaluation as the basis for our calculations.

Using third-party elasticity measures, we estimate that an average dollar overvaluation of 5 to 10 percent would have an overall income effect on trade-exposed sectors of \$30 billion to \$60 billion in 2007/8. The sensitivity is about \$30 billion for every 5 percent overvaluation. There are three components to this competitiveness effect.¹³

10 Pierre-Olivier Gourinchas and Helene Roy, *From World Banker to World Venture Capitalist: U.S. External Adjustment and the Exorbitant Privilege*, chapter in *G7 Current Account Imbalances: Sustainability and Adjustment*, edited by Richard Clarida, NBER, 2007; McKinsey Global Institute Cross-Border Investment Database.

11 William R. Cline and John Williamson, *New Estimates of Fundamental Equilibrium Exchange Rates*, Policy Brief 08–07, Peterson Institute for International Economics, June 2008.

12 Peter Isard, *Equilibrium Exchange Rates: Assessment Methodologies*, IMF Working Paper 07/296, December 2007.

13 The methodology appendix contains further details of the approach used.

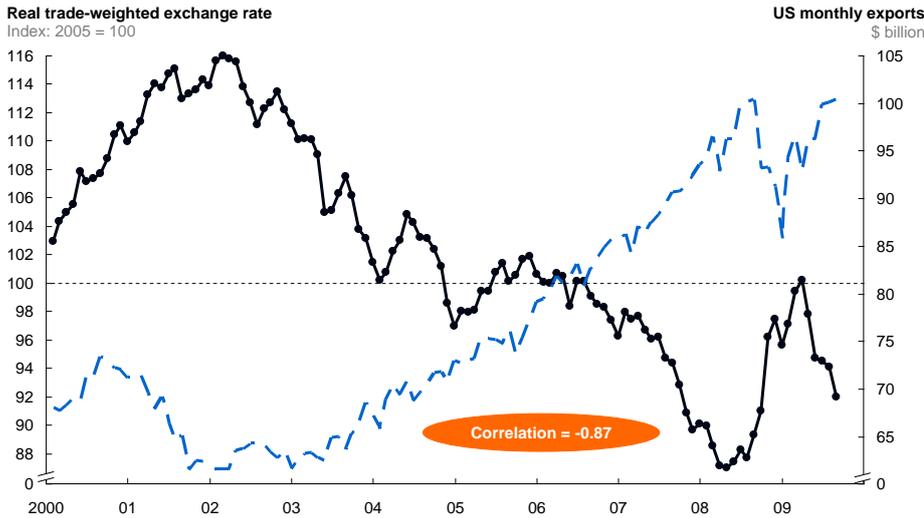
First, we estimate that there will be a reduction in exports of \$45 billion to \$85 billion as US exports become less competitive in foreign markets—there is a tight negative correlation between the dollar exchange rate and US exports (Exhibit 4).

Exhibit 4

Dollars down, exports up

Currency swings can trump fundamentals in determining the competitiveness of companies

—●— Dollar exchange rate (LHS)
— — — US total exports



SOURCE: Bank for International Settlements; Bureau of Economic Analysis

Second, a higher exchange rate will make imported goods and services more competitive relative to domestically produced alternatives. This will create additional demand for imports, which will have a negative income effect of an estimated \$10 billion to \$20 billion. Third, the elevated exchange rate also generates benefits in terms of lower prices for consumers of imported goods and services. We estimate this consumer benefit to be worth \$25 billion to \$45 billion a year. Overall, the exchange rate effect generates a net financial cost of \$30 billion to \$60 billion.

The actual effect on the economy may be lower than these estimates to the extent that the resources displaced from the export and import-competing sectors are used productively elsewhere in the economy. In this case, the actual cost is the distortion associated with these resources not being employed in the most efficient activity. But when unemployment is high—as it currently is in the United States—resources displaced by a high dollar will be less likely to be utilized elsewhere.

THE DISTRIBUTION OF COSTS AND BENEFITS

Reserve currency status has some sharp distributional consequences. At a global level, the income benefit that the United States earns is at the expense of other countries. Taking the income costs and benefits together generates an overall net benefit from reserve currency status of \$40 billion to \$70 billion a year. This is equivalent to a financial transfer of an amount in this range from the rest of the world to the United States in return for the provision of a liquid reserve currency. For example, national governments holding reserves such as China, Japan, and South Korea earn a lower rate of interest on their dollar-denominated investments.

Reserve currency status also has striking distributional effects within the US economy. Although the United States as a whole benefits modestly from its reserve currency status, the costs and benefits are not distributed uniformly across the economy. Specifically, exporters, those that compete with imports, and savers tend to incur a cost while consumers and borrowers gain. Indeed, the government is the largest single beneficiary of the reserve currency status of the United States, benefiting from seigniorage revenue as well as lower borrowing costs on public debt.

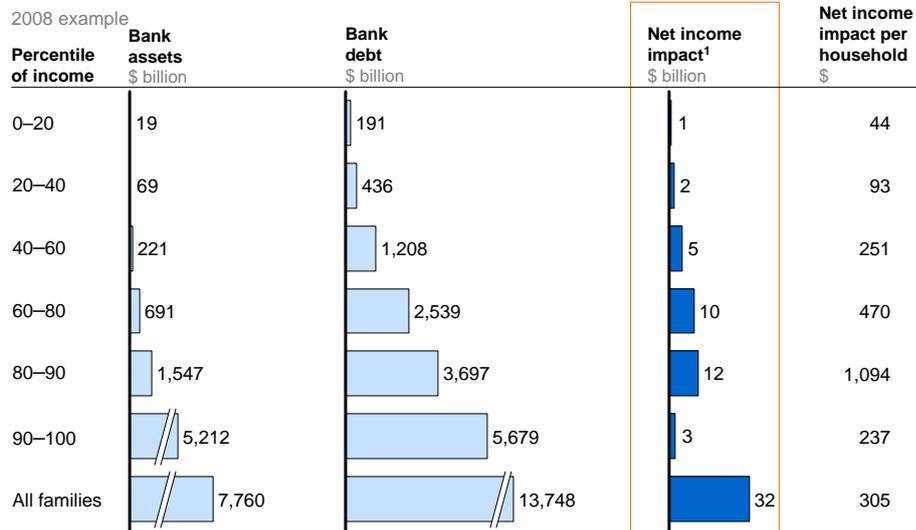
Looked at another way, there is a transfer of resources from US companies that are exporters and those that compete with importers, to private and public sector borrowers. In this sense, the reserve currency status of the United States has reinforced the imbalances that have developed in its economy.

Our analysis also shows that there are strong distributional effects between households (Exhibit 5). Those individuals who have higher debts than interest-earning assets will obtain greater benefit from the reserve currency status of the United States. In contrast, those who have more interest-earning assets than debt will face a cost. There is a distinct age profile to the distribution of costs and benefits with younger cohorts benefiting but older cohorts tending to incur a cost. In addition, the benefits accrue disproportionately to those households in the upper half of the income distribution that tend to have higher bank borrowing.

Exhibit 5

Much of the borrowing cost advantage benefits those in the top half of the income distribution

2008 example



1 Applying US government bond interest rate discount of 54 basis points.

SOURCE: US Department of the Treasury; Federal Reserve; McKinsey Global Institute analysis

We have conducted this analysis in terms of the direct financial impact of the various costs and benefits of reserve currency status. However, it is also possible to express these costs and benefits in terms of the overall impact on GDP and employment (see Box 3: “Broader economic analysis” for a discussion of the ways in which we can measure this impact).

Box 3: Broader economic analysis

The estimates in this chapter are in terms of the direct financial impact of the various costs and benefits of reserve currency status. It is also possible to express these costs and benefits in terms of the overall impact on GDP and employment.

In a normal year, we calculate that the net financial benefit of \$40 billion to \$70 billion from reserve currency status converts into an overall GDP effect of \$115 billion to \$185 billion, or 0.9 to 1.4 percent of GDP. To obtain this figure, we applied a standard fiscal multiplier to the \$10 billion of seigniorage income to generate an estimate of additional GDP of \$15 billion. We then used an interest elasticity measure to convert the reduced cost of capital into an additional estimated \$230 billion contribution to US GDP. Finally, we applied independent estimates of the relationship between exchange rates and GDP to calculate a negative effect on GDP of \$60 billion to \$130 billion.

In a crisis year, using the same approach, we estimate that the net financial benefit converts into an overall GDP benefit of \$15 billion to \$75 billion, or 0.1 to 0.5 percent of GDP.

We have also considered the potential employment consequences of reserve currency status. The historical record suggests that a 1 percent change in GDP is associated with a change of roughly 1 million jobs.¹⁴ This indicates that reserve currency status has an overall positive effect on employment in the United States. However, employment in trade-exposed sectors (exporting and import competing) is likely to be lower in the range of 400,000 to 900,000 jobs. This does not translate one-for-one into higher overall unemployment because some of these people will find alternative employment in other sectors. In other parts of the economy, the benefit of the lower cost of capital and slightly lower taxes because of the benefits received by the government is positive for employment.

COSTS AND BENEFITS IN A CRISIS YEAR

The analysis of the costs and benefits of reserve currency status described in the previous section assumes normal conditions. But the last year or so has been anything but normal. It is therefore instructive to consider how the distribution of costs and benefits changes in a crisis year compared with a more normal year. For the purposes of this analysis, we define the crisis year as the period from July 2008 to June 2009.

While the net benefit to GDP associated with reserve currency status is in the range of \$40 billion to \$70 billion in a normal year (0.3 to 0.5 percent of GDP), this reduces in a crisis year to between a net cost of \$5 billion and a net benefit of \$25 billion (0 to 0.2 percent of GDP). This reduction in the size of the net benefit is due to substantial inflows of foreign capital into the United States during the crisis year.

These increased foreign purchases of US Treasuries enhanced the cost of capital advantage from 54 basis points in 2008 to an estimated 60 basis points in the first half of 2009.

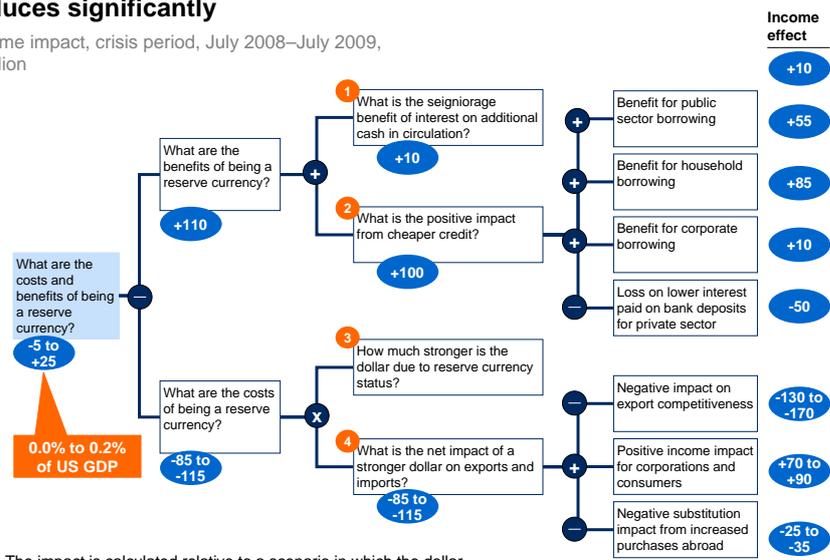
¹⁴ *Estimates of Job Creation from the American Recovery and Reinvestment Act of 2009*, Council of Economic Advisors, May 2009.

However, this larger benefit was outweighed by a sharp appreciation of the dollar, which had a negative impact on exporting and import-competing sectors. The dollar spiked by 10 percent over this period, which had a strongly negative effect on company competitiveness. The trade cost of reserve currency status increased from \$30 billion to \$60 billion in a normal year to between \$85 billion and \$115 billion in a crisis year—a difference that equates to about 0.5 percent of GDP (Exhibit 6).

Exhibit 6

In a crisis year, the benefit to the United States of being a reserve currency reduces significantly

Income impact, crisis period, July 2008–July 2009, \$ billion



Note: The impact is calculated relative to a scenario in which the dollar is not held as a reserve currency at all (i.e., a zero baseline).

SOURCE: McKinsey Global Institute analysis

The exchange rate effect due to the safe haven status of the dollar appears to have been temporary, with the dollar since reversing its appreciation as global economic concerns dissipated back to their precrisis level. However, these movements are an indication of the centrality of the dollar as the global reserve currency. The only other currency where a similar marked appreciation was observed was the Japanese yen, which appreciated by more than 25 percent over a similar period—although in the yen’s case this was due to the unwinding of the yen carry trade by Japanese investors as their risk sensitivity increased, rather than by foreign investors choosing to invest their funds in yen-denominated assets.

While the dollar may have reversed the upward movement, there is a risk of some hysteresis effect in which the loss of market share as a result of the stronger dollar for exporters and those that compete with importers never fully recovers. Some customers will have switched manufacturers on the basis of price differences and will remain with their new supplier even when prices realign back. We have not sized this effect.

The events of the crisis year that we have examined highlight some of the responsibilities of being the world’s primary reserve currency. Not only did the GDP benefit of reserve currency status fall to a marginal level but crisis conditions also reinforced the distributional effects of that status in a way that exacerbated existing economic imbalances in the United States.

HOW THE COSTS AND BENEFITS MAY EVOLVE

So what might happen to the costs and benefits of reserve currency status in the coming years? Although reserve currency status has been positive for the United States to date, it is worth considering how the balance of costs and benefits of reserve currency status may evolve for the United States over the next few years.

First, we estimate that the seigniorage income in 2012 due to reserve currency status will be unchanged at \$10 billion. However, the period to 2012 will see changes in the benefit from the lower cost of capital and the cost associated with an elevated exchange rate.

The change in the net effect of the lower cost of capital will depend on the overall extent of deleveraging and debt accumulation in the US economy by households, companies, and the government. By 2012, using the 2008/9 cost of capital advantage, we estimate that the lower interest rate on government borrowing will result in annual savings of \$80 billion. This is an increase from the annual benefit of \$45 billion in a normal year and \$55 billion in a crisis year. The increase in this benefit is due to the federal government's very substantial forecast borrowing program over the next several years.

There is also a small increase in the cost of capital advantage on private sector (household and company) borrowing. We estimate that the net saving in 2012 is \$50 billion compared with \$45 billion in both the normal and crisis years. Taken together, we estimate that these two types of benefit generate an additional \$40 billion in income by 2012 relative to the normal year.

However, the negative effect of the higher exchange rate associated with reserve currency status may become much larger over the next few years. There is emerging pressure for a greater contribution to economic growth from exporting given current imbalances in the US economy and the likelihood that private consumption growth will be relatively slow. This pressure for export-led growth will likely become more intense because of the high levels of unemployment in the United States projected for the next few years.

As Harvard University's Ken Rogoff observed recently in the context of the US Administration's efforts to boost employment, "I don't think anything they can come up with is as powerful as the dollar declining ... It's a good short-term boost. Every country's manufacturing sector loves it when the currency has a moderate depreciation."¹⁵

But there are several factors related to the reserve currency status of the dollar that could potentially hinder any US attempt to achieve such depreciation. First, dollar depreciation delivers no competitive advantage against countries in the "dollar zone" where economies either fix or manage their exchange rates against the dollar and so match any dollar depreciation. We have seen this recently as several Asian countries have intervened in currency markets to offset the competitive disadvantage caused by a depreciating dollar—as well as a declining renminbi because of its effective peg against the US currency.

Moreover, to the extent that global financial imbalances do not reduce sharply over the medium term, there will be significant ongoing foreign demand for dollar-denominated assets as governments continue to seek investment locations for their official reserves. This will place continuing upward pressure on the dollar—and create

15 Bill Marsh, "Winners and Losers as the Dollar Falls," *New York Times*, December 6, 2009.

an “opportunity cost” associated with the dollar’s status as a reserve currency. To the extent that this opportunity cost is large, the net benefit to the United States of being issuer of the world’s primary reserve currency will diminish.

Which of these effects—the cost of capital benefit or the exchange rate cost—will prove stronger is uncertain. It may be that other, qualitative factors will prove more significant in determining the balance of costs and benefits over the coming years.

In addition to the relatively modest financial benefits, many observers would argue that the United States also enjoys significant privileges related to the geopolitical and strategic benefits from being the center of the global economic and financial system and the policy autonomy that status confers. Specifically, the United States has been able to run larger fiscal deficits and a looser monetary policy because it has been subject to fewer market disciplines.

In one sense, this is a clear advantage that accrues to the reserve currency issuer. But the large accumulation in recent years of foreign-held US debt has created a potentially significant responsibility that could potentially constrain future US policy autonomy. It may be possible to have too much of a good thing. Some economists, including Fred Bergsten, argue that reserve currency status has generated an additional cost to the US economy by encouraging—or requiring—the United States to run significant current account deficits and accumulate debt.¹⁶

Given the magnitude of the current account surpluses that are being generated, it is arguable that this borrower of last resort role has become unsustainable. Global official reserves have doubled over the past five years from \$3.4 trillion to \$6.8 trillion. The scale of the global financial imbalances—and the economic growth imperative at the center of the system in the aftermath of the global banking and financial crisis—has created significant stress in the system.¹⁷

Taken together, our quantitative assessment and our analysis of the qualitative aspects of reserve currency status suggest that the United States might be increasingly ambivalent about retaining that status. If the United States could retain access to cheap credit while pursuing relatively loose monetary and fiscal policy, it seems likely that it would want to do so—but it is plausible to argue that the benefits of reserve currency status may be readily outweighed by other factors. It is not clear that all in the United States would agree with M. d’Estaing’s assessment of the exorbitant privilege supposedly enjoyed by the United States as the primary reserve currency issuer.

16 Fred Bergsten, “The Dollar and the Deficits: How Washington Can Prevent the Next Crisis,” *Foreign Affairs*, November/December 2009.

17 This is analogous in some ways to Triffin’s Dilemma, first identified in the 1960s. Triffin’s Dilemma is the intuition that because the reserve currency issuer has to provide liquidity to the global system by issuing debt denominated in its currency, eventually the pressure to provide additional debt will undermine the sustainability of the reserve currency issuer. This may place the system under significant pressure and perhaps even cause it to break down.

4. The costs and benefits to the Eurozone

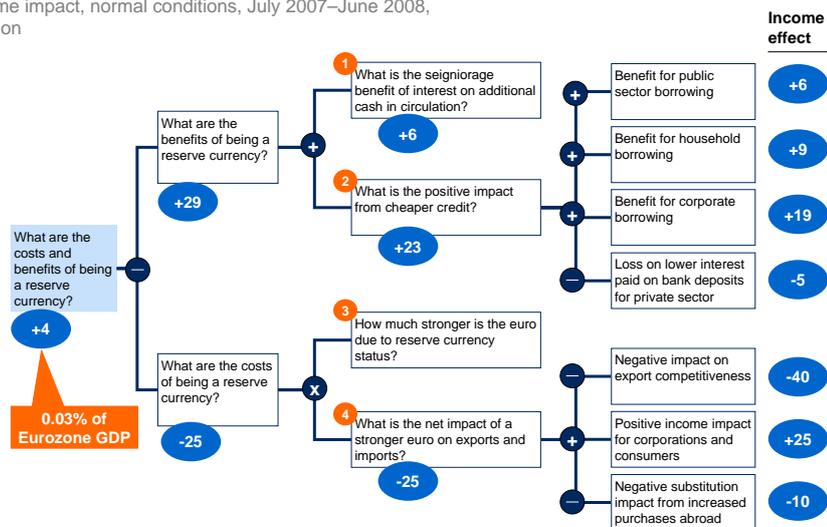
So are we likely to see a push from the Eurozone to become a much more central part of the global reserve currency system? To what extent might the Eurozone be willing and able to share the benefits and responsibilities of reserve currency status with the United States?

Using the same approach as for the United States, we estimate that the Eurozone captures a very small net financial benefit from being a reserve currency. Specifically, we estimate a net financial benefit in normal economic conditions of just \$4 billion a year—within rounding error of zero (Exhibit 7).

Exhibit 7

The Eurozone does not obtain a benefit from its secondary reserve currency status

Income impact, normal conditions, July 2007–June 2008, \$ billion



Note: The impact is calculated relative to a scenario in which the euro is not held as a reserve currency at all (i.e., a zero baseline).

SOURCE: McKinsey Global Institute analysis

The first benefit that the Eurozone receives is the seigniorage income that is due to its growing secondary reserve currency status. About 20 percent of euro notes and coins are estimated to be held and used outside of the Eurozone area (particularly in countries on the fringe on the Eurozone that now use the euro as a medium of exchange). This generates annual seigniorage income of \$6 billion.

The second category of benefit associated with emerging reserve currency status is access to cheaper sources of debt financing. Because the Eurozone is a less important investment location for official reserves than the United States, the cost of capital advantage is smaller than that enjoyed by the United States. We estimate a cost of capital advantage in 2008 of 28 basis points, about half of the 54 basis points effect for the same period in the United States. Applying this lower cost of capital to net Eurozone borrowing generates a financial benefit of \$23 billion a year.

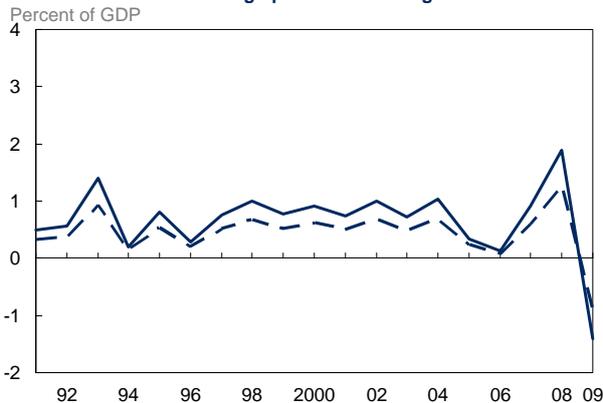
In terms of the costs of the reserve currency status, the euro appears to be slightly overvalued. In 2008, William Cline and John Williamson's estimate of the fundamental equilibrium exchange rate suggested that the euro was overvalued by 4 percent.¹⁸ Our analysis suggests that this results in a negative income effect of \$25 billion due to the reduced competitiveness of the export and import-competing sectors in the Eurozone.

As with the United States, we also assessed the costs and benefits of reserve currency status of the euro during the crisis year of July 2008 to June 2009. Interestingly, the effect of the crisis on the net benefit of reserve currency status was very different in the Eurozone than for the United States. During the 12 months of the crisis, there were significant foreign capital flows out of the Eurozone. Inflows that had peaked at around 2 percent of GDP reduced to an outflow in excess of 1 percent of GDP. In a sense, there was a "reverse flight to quality." Being a secondary reserve currency is a very different proposition from being the primary reserve currency in a crisis (Exhibit 8).

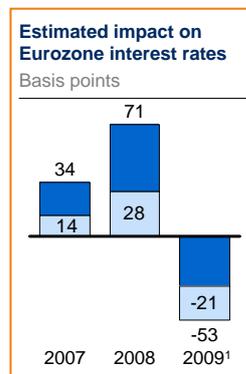
Exhibit 8

Foreign purchases of Eurozone government bonds lowered interest rates by 42 basis points in 2008

Estimated annual net foreign purchases of long-term Eurozone bonds



— Total foreign purchases of euro government bonds (Treasury and agency bonds)
 - - Total foreign purchases of euro government bonds by central banks and sovereign wealth funds
 □ Interest rate impact used for reserve currency calculations



¹ Based on Q1 and Q2 data.

SOURCE: Bank for International Settlements

As a consequence of these outflows, the euro depreciated by about 3 percent in effective terms compared with the 10 percent appreciation of the dollar over this period. This reduced the cost of being the secondary reserve currency with the trade costs reducing from \$25 billion to \$5 billion.

These outflows also had a significant impact on the estimated cost of capital advantage. In the first six months of 2009, we estimate that these outflows raised the cost of capital by about 21 basis points. This reduced the financial benefit from \$23 billion to \$3 billion.

¹⁸ William R. Cline and John Williamson, *New Estimates of Fundamental Equilibrium Exchange Rates*, Policy Brief 08-07, Peterson Institute for International Economics, June 2008.

With the seigniorage benefit unchanged at \$6 billion, the overall effect in the crisis year was a net benefit to the Eurozone of \$4 billion. This was the same net benefit as in a normal year. Of course, these are still very small numbers in a relative sense.

FUTURE COSTS AND BENEFITS FOR THE EUROZONE

The euro has, as we have noted, become a more significant reserve currency over the last decade, and today it accounts for 27 percent of official reserves compared with 18 percent in 2000. But to understand the attitude of Eurozone countries with respect to moving toward primary reserve currency status, we need to estimate how the costs and benefits will develop if the euro continues to become more prominent. More substantial foreign demand for euro-denominated assets would reduce the cost of capital in the Eurozone but would also lead to appreciation in the value of the euro. To help us analyze the likely costs and benefits ahead, we have constructed three scenarios showing different rates of growth in the euro as a reserve currency to 2020 (see Exhibit 14 in the appendix for further detail).

The first scenario is a baseline case in which the euro continues to grow in importance as a reserve currency at the same rate as over the past decade. The dollar would remain the dominant reserve currency. By 2020, the euro would account for 36 percent of official reserves and the dollar 45 percent. We assume that overall growth in global official reserves would match that of global GDP.

The second scenario is an accelerated process in which the euro would equal the standing of the dollar as a reserve currency—both accounting for 45 percent of official reserves—by 2020. We characterize this situation as a “dual reserve currency system.” Again, overall growth in global reserves is assumed to match global GDP growth.

The third scenario incorporates more aggressive growth in terms of overall reserves. In this scenario, reserves grow at a compound annual rate of 11 percent, in line with reserve growth over the past decade. And the composition of reserves matches the current makeup of the SDR—34 percent euro, 44 percent dollar, 11 percent each of the yen and sterling.

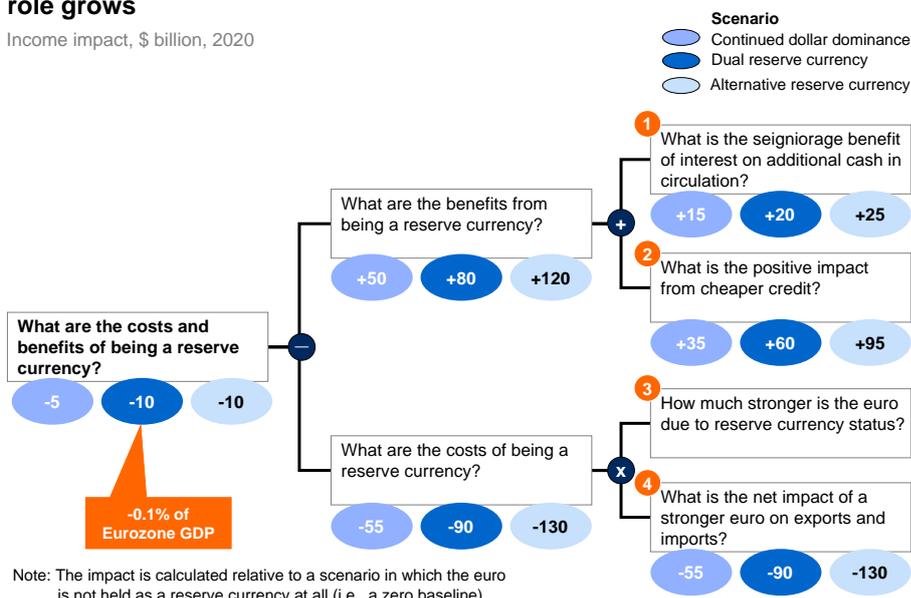
In each of these three scenarios, there would be a substantial increase in foreign government purchases of euro-denominated assets, ranging between \$170 billion and \$450 billion a year. To put this in context, total sovereign debt issuance in the Eurozone in 2006 was about \$800 billion and AAA-rated sovereign debt issuance was about \$500 billion in 2006. So the incremental inflows on the scale that we assume in these scenarios would have substantial effects on the Eurozone economy.

Our analysis indicates that there would be an increasing cost to the Eurozone as the euro continued to become more prominent as a reserve currency (Exhibit 9). We estimate that these purchases would reduce the cost of capital by between 41 and 108 basis points. However, this effect and our estimates of increased seigniorage revenue would be outweighed by the costs of further appreciation in the euro exchange rate. Specifically, we estimate that the euro could move from an overvaluation of an approximately 4 percent in 2008 to an overvaluation of as much as 16 percent by 2020. Our estimates suggest an overvaluation of 6, 10, and 16 percent for the three scenarios that we consider.

Exhibit 9

The Eurozone is likely to incur increasing costs as its reserve currency role grows

Income impact, \$ billion, 2020



As an illustration of the costs and benefits of a greater reserve currency role for the euro, let's consider the dual reserve currency scenario. Overall, we estimate that the Eurozone would incur a financial cost of \$10 billion annually in this scenario, representing about 0.1 percent of Eurozone GDP. We estimate the benefit of additional seigniorage income at \$20 billion and the effect of the cost of capital advantage at \$60 billion. However, we assess the costs to competitiveness of an elevated exchange rate to be around \$90 billion.

Given that European policy makers are concerned at today's euro exchange rate, the prospect of a permanently stronger euro is likely to be unattractive. This would impose a particular burden on some of the member states that are already suffering from the euro's strength. Goldman Sachs, for example, estimates that euro depreciation of 30 percent is required in countries like Greece, Italy, and Spain in order to bring them back to current account balance.¹⁹ Spain and Portugal have current account deficits of about 10 percent of GDP while Greece is running a deficit of more than 14 percent.

But this appreciation would likely have broader implications for national competitiveness. For example, exporting countries such as Germany, which sells more than half of their exports to countries outside the Eurozone, have a significant exposure to a permanent appreciation in the euro. Perhaps unsurprisingly, the ECB has recently made public statements arguing for a strong dollar policy, stating that there is no case for further dollar depreciation against the euro.

In summary, there seems little reason for the European authorities to attempt to accelerate the process of becoming a reserve currency given the inevitable pressures for appreciation of the euro at a time when the Eurozone is focused primarily on reigniting GDP growth in the aftermath of the global financial crisis.

¹⁹ *Financial Times*, November 24, 2009.

5. The impact on companies

Our analysis so far has shown that reserve currency status has had significant effects on the cost of borrowing and on the level of the dollar and of the euro, and that changes in reserve currency status in the future will therefore have an impact on future movements of these key currencies. The current functioning of the dollar-centered reserve currency system has also contributed to sharp movements in exchange rates and concerns about the prospects for heightened exchange rate volatility. But what does this mean for companies' competitiveness and decision making? And how might this impact on competitiveness and planning evolve?

To arrive at an initial sense of the potential implications for business of the current and potential shape of the reserve currency system, the best place to start is to consider how recent exchange rate movements have affected companies. It is clear that the impact has been substantial. The sharp movements in exchange rates have generated a significant redistribution of resources as companies gain or lose profits and market share, depending on where they are located.

For example, the recent appreciation of the euro has had a negative impact on the competitiveness of many Eurozone companies. In the third quarter, Eurozone companies suffered a 27 percent fall in profits compared with only a 1.2 percent fall for European companies outside the Eurozone, according to recent ING research. EADS, for example, recently attributed a €1.1 billion impact on net income for the previous nine months to adverse currency movements.²⁰ And there are reports of companies moving production from Finland, inside the Eurozone, to Sweden, which is outside, to reduce the competitive impact of the appreciating euro.²¹

On the other side of the world, the competitive position of Japanese companies such as Toyota and Sony, relative to South Korean rivals such as Hyundai and Samsung Electronics, has deteriorated as the Korean won has depreciated due to capital outflows and the Japanese yen has strengthened given its safe haven status. The yen is now 60 percent stronger in won terms than its precrisis level, currently trading at around 13 won compared with below 8 won in 2007. Partly as a result, Samsung Electronics' third-quarter operating profits were more than twice the combined operating profits of nine of Japan's largest consumer electronic companies.²²

The sharp volatility in exchange rates is not only an issue of the here and now; it also makes it difficult for businesses to plan. As Nissan-Renault's CEO Carlos Ghosn said recently, "If we have a trend like a currency getting stronger, manufacturers and industry prepare for it. What we do not like is sudden variation."²³

These examples are consistent with the response by global executives to currency-related questions that we added to the latest *McKinsey Quarterly* economic outlook

²⁰ *Financial Times*, November 17, 2009.

²¹ *Financial Times*, October 26, 2009.

²² *Wall Street Journal*, November 5, 2009.

²³ *Financial Times*, November 18, 2009.

survey of executives.²⁴ The survey indicates that both the level of exchange rates and exchange rate volatility have a large, and growing, negative effect on company profits and investment decision making. And the respondents expect to see heightened levels of exchange rate volatility and significant changes in the reserve currency system in the coming years.

Executives report that the level and volatility of exchange rates have a substantial impact on the competitiveness of companies. The survey shows that 29 percent of respondents consider that exchange rate movements have a “very” significant or “extremely” significant impact on company profits, and a further 28 percent reported a “somewhat” significant effect. Only about one-quarter of companies report no exchange rate impact on profits. These are high numbers given that this survey sample includes many domestically oriented companies.

Indeed, a full 50 percent of manufacturing companies, which are more likely to be in trade-exposed activities, report a “very” or “extremely” significant effect on profits from exchange rates, and a further 31 percent of manufacturing companies report a somewhat significant effect. There is also significant geographic variation in the results. While only 41 percent of North American companies reported an extremely or very significant impact on profits from exchange rates, 68 percent of respondents in developing markets reported such a relationship.

The survey findings show that exchange rates have a direct impact on company decision making with 40 percent reporting that exchange rates have an extremely or very significant impact on geographic expansion or relocation decisions. And some 21 percent of respondents report that exchange rate uncertainty has reduced their planned investment over the next two years. Indeed, 11 percent of respondents report that the reduction in planned investment due to exchange rate uncertainty was in excess of 10 percent.

This effect of exchange rate uncertainty on investment decision making was particularly strong in developing markets including China, India, and non-Eurozone countries. Over half of Indian respondents say they have reduced investment plans, and 39 percent of respondents in other developing markets and China report reduced investment plans, as a result of exchange rate uncertainty. By sector, the biggest impact was in manufacturing: 32 percent of manufacturing firms report reduced investment, with 16 percent reducing planned investment by more than 10 percent (and 9 percent of manufacturing companies by more than 20 percent).

The survey shows that 44 percent of respondents believe that the impact of exchange rate movements on their business has increased over the past two years. This compares with just 12 percent who believe that the impact has reduced. This belief was particularly strong in the manufacturing sector, where 63 percent of respondents reported that the effect of the exchange rate has increased over the past two years.

Overall, these survey results reveal a strong relationship between exchange rates and competitiveness. Unsurprisingly, these effects are more pronounced among companies in trade-exposed sectors such as manufacturing, and in developing markets—particularly in the Asia Pacific region. And there is a view that exchange rate

²⁴ McKinsey Economic Outlook Survey, December 2009. There were 1,608 respondents to the full survey. However, the firm-specific exchange rate questions were restricted to 480 senior executive respondents from around the world (private sector C-level roles, as well as those in the finance function). The full survey results are available at www.mckinseyquarterly.com.

volatility is likely to further increase over the next five years, suggesting that exchange rate movements may have an even stronger effect on company competitiveness in the years ahead.

When asked about the future outlook, 43 percent of respondents to the survey expect exchange rate volatility to increase over the next five years compared with 21 percent who expect a moderation in volatility. Again, there is substantial geographic variation to these results; about two-thirds of respondents in developing markets and in the Asia Pacific region expect an increase in volatility over the next five years compared with (a still high) 37 percent in North America.

And when asked about the future of the reserve currency system, just 18 percent expected the dollar to be the dominant reserve currency by 2025. A dual currency system anchored on the euro and the dollar was the most popular choice, selected by 26 percent of respondents. The second most popular option—chosen by 23 percent of respondents—was a currency basket arrangement such as an SDR-based system. Of those surveyed, 12 percent expect the euro to be the dominant currency while 6 percent chose the renminbi.

Interestingly, there was a strong home bias in these responses: 31 percent of North American respondents expect the dollar to dominate in 2025, 20 percent of European respondents anticipate the euro to be the single leading currency, and 24 percent of Chinese respondents expect the renminbi to be the dominant reserve currency by 2025 (compared with just 3 percent of US respondents and 5 percent of Eurozone respondents).

Other executive survey evidence tells a similar story of the materiality of the exchange rate effect on companies. In 2006, Deutsche Bank undertook a survey of more than 230 global companies on corporate risk management issues.²⁵ Of all the types of risk exposures that companies face—commercial risks, risks in the external environment, and market risks—foreign exchange risks were ranked as having the highest potential cost if left unmanaged (equal with “strategic risks”). Perhaps unsurprisingly, 82 percent of respondent firms use foreign exchange derivatives to manage their exchange rate exposure.

As the company examples described suggest, few strategic or operational decisions have the materiality of bottom-line impact that exchange rate movements can have. To the extent that changes in the reserve currency system have an impact on the level of key exchange rates as well as increased exchange rate volatility, this will impinge on businesses and their competitive positions. It is likely, for example, that the ongoing growth in the Eurozone as a reserve currency area will place ongoing upward pressure on the euro exchange rate.

In addition to the survey-based evidence we report above, there is formal empirical evidence documenting the negative economic effect exchange rate volatility has on companies.²⁶ Most academic studies have focused on the relationship between

25 The Theory and Practice of Corporate Risk Management Policy, Deutsche Bank, February 2006.

26 Philippe Aghion, Philippe Bachetta, Romain Ranciere, and Ken Rogoff, *Exchange Rate Volatility and Productivity Growth: The Role of Financial Development*, NBER Working Paper 12117, May 2006; Peter Clark et al., *Exchange Rate Volatility and Trade Flows – Some New Evidence*, IMF Working Paper, May 2004; Christian Broda and John Romalis, *Identifying the Effect of Exchange Rate Volatility on Trade*, unpublished manuscript, FRBNY and Chicago GSB, 2003; G. Dell’Ariccia, *Exchange Rate Fluctuations and Trade Flows: Evidence from the European Union*, IMF Staff Papers 46(3), pp. 315-334, 1999; Kathryn Niles Russ, *Exchange Rate Volatility and First-time Entry by Multinational Firms*, mimeo, November 2007.

exchange rate volatility and the level of exports. The consensus of this research is that the exchange rate volatility has a negative, but small, effect on exporting. Estimates of the reduction vary but most converge around 5 percent. There is also more limited evidence that shows a negative relationship between exchange rate uncertainty and foreign investment by companies.

However, company experience and the McKinsey survey evidence suggest that the costs of exchange rate volatility are more substantial than is captured in this empirical literature. It seems likely that exchange rate volatility has more substantial effects on variables such as investment, market share, profitability, and so on, than on exports. Certainly, the extensive use of costly hedging instruments suggests that companies do indeed estimate significant value at risk from exchange rate movements.

Both qualitative and quantitative evidence makes it clear that exchange rate volatility is an increasingly important strategic consideration for companies—and businesses should factor into their thinking the possibility that uncertainty about the behavior of the countries at the center of the reserve currency system may lead to greater volatility in the future.

6. Implications for the reserve currency system

The analysis that we have presented in this paper suggests that the dollar is unlikely to lose its dominant role as the world's primary reserve currency in the near future. The size of the US economy and its financial system, the strong tendency toward inertia in currency usage, and the reluctance of the Eurozone authorities to assume a more prominent reserve currency role, all suggest that the dollar will continue to be the reserve currency anchor to the global economy. However, our examination of the costs and benefits of reserve currency status also raises questions about the functioning of the overall reserve currency system in coming years. Our assessment suggests that neither the United States nor the Eurozone has a particularly strong interest in acting to maintain their reserve currency status to the extent that it conflicts with other policy goals.

What might this mean in practical terms? For the United States, the relatively modest benefits derived from the dollar's status as the primary reserve currency make it less likely that it will be willing to pursue policies to meet the implicit responsibilities associated with that status if they conflict with the policies needed for a domestic agenda.

US monetary and fiscal policy is currently very loose and focused squarely on restoring growth in the domestic economy. These policy settings have sparked worry about the consequences for global exchange rate stability. For instance, observers have expressed concern that prevailing zero interest rates are generating a substantial "dollar carry trade" that is causing pressure on some exchange rates.

Given the relatively small net benefits of dollar reserve currency status, the United States may perceive the costs of maintaining a stable currency through tighter monetary and fiscal policy as unacceptably high given the scale of the economic growth and employment challenges that the economy faces. The United States may question whether its implicit obligations to the global system outweigh its desire to run relatively loose monetary and fiscal policies as a way of creating jobs and promoting growth.²⁷

It is indeed difficult to find clear-cut historical examples of the United States putting the interests of the global exchange rate system ahead of its domestic priorities. The practical implication of our analysis may therefore simply be to confirm that policy change motivated by reserve currency considerations is relatively unlikely.

In the Eurozone, our analysis suggests that European policy makers will be reluctant to see a rapid pathway to more dominant reserve currency status for the euro. So we should expect a continuation of the current policy statements in which the ECB and others have expressed concern about the appreciation of the euro. Indeed, in a November 2009 interview with *Le Monde*, ECB president Jean-Claude Trichet said that the euro was not designed as a global reserve currency.²⁸

27 This debate has already commenced, notably in a recent essay by Fred Bergsten, "The Dollar and the Deficits: How Washington Can Prevent the Next Crisis," *Foreign Affairs*, November/December 2009.

28 *Wall Street Journal*, November 17, 2009.

With jobs and growth imperatives dominating in the United States and the Eurozone, the main reserve currency issuers may be increasingly disinclined to play a leadership role in terms of policy settings consistent with global exchange rate stability. Rather, there may be more of an “unmanaged” reserve currency system in which the United States and the Eurozone follow a hands-off approach and place a much greater weighting on the domestic economic agenda in setting policy than on supporting the global system. The dollar is likely to remain the dominant reserve currency, but there may not be a firm hand on the tiller.

Does this matter? After all, the reserve currency system has not been led or tightly managed for decades. The dollar depreciated by about 20 percent between 2002 and 2007 without causing obvious tensions in the global exchange rate system or threatening the primacy of the US currency. Perhaps today’s tendency to put domestic economic priorities before global stability is par for the course—and we can expect business as usual for the global exchange rate system. Or perhaps not. We can also make the case that the global financial system has changed in recent years in ways that may make this absence of leadership more problematic.

First, the scale of the global financial imbalances has led to unprecedented global reserve accumulation. Global official reserves have doubled over the past five years, from \$3.4 trillion to \$6.8 trillion. Although the scale of the imbalances has reduced with the current global economic slowdown, they may return as global growth resumes. The scale of these imbalances places the reserve currency system under significant stress, with a marked impact on competitiveness in the United States and the Eurozone as exchange rates are put under upward pressure. The quantum of reserves also means that shifts in reserve allocations can have substantial impacts on exchange rates over time.

A related issue is the substantially increased scale of reserve holdings of dollars by foreign government investors over the past five years. This means that, to a greater extent even than in the past, issues of exchange rate policy are political as well as economic. It would, for instance, be more difficult for the United States to encourage a substantial depreciation of the dollar because governments holding significant dollar-denominated assets would be likely to oppose such a development that would erode the value of these holdings.

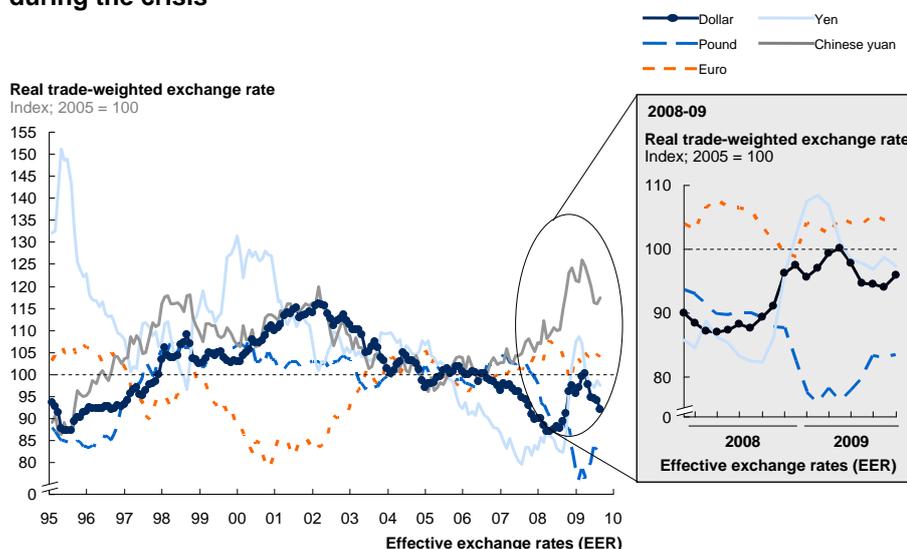
The second major change to the landscape that we believe is important is the substantial increase in cross-border flows of private capital. For example, the Bank for International Settlements (BIS) estimates that the value of foreign exchange transactions increased by 69 percent between 2004 and 2007.²⁹ These private capital flows are a major driver of exchange rate movements in addition to the official reserves discussed. The various currency carry trades, in which capital moves from low-yielding to high-yielding currencies, is one example of the substantial cross-border capital flows that can drive large exchange rate movements—sometimes only loosely connected to underlying economic fundamentals (Exhibit 10).

Third, there is now a plausible alternative reserve currency candidate. If investors perceive there to be a material risk of US depreciation, they can move a portion of their capital into euro-denominated assets—and require higher interest rates to invest in dollar assets. When the dollar was the only meaningful reserve currency, the likelihood of this type of capital flow was smaller. Indeed, periods of transition in global financial arrangements have historically led to heightened volatility.

²⁹ Bank for International Settlements, *Foreign exchange and derivatives market activity in 2007*, Triennial central bank survey, December 2007.

Exhibit 10

Key exchange rates have varied substantially, with sharp movements during the crisis



SOURCE: Bank for International Settlements

Taken together, these three changes suggest that there is greater potential for destabilizing shifts in cross-border capital flows and consequent exchange rate instability than there was a decade ago. In this context, an unmanaged reserve currency system could contribute to greater exchange rate uncertainty and volatility and we could see more of the type of significant exchange rate movements that we have observed over the past couple of years.

In turn, a greater incidence of exchange rate fluctuations could lead to governments becoming more directly involved in currency markets. We have already seen several governments begin to intervene more actively on foreign exchange markets to curb volatility and lean against movements that reduce their competitiveness. For instance, there has been increased official intervention in foreign exchange markets in Asia in response to a depreciating dollar, the imposition of a tax on portfolio capital inflows in Brazil, and increased “noise” indicating discomfort with exchange rate movements from several other countries.

Partly in response to mounting perceptions of instability in the system, recent months have seen several proposals for reforms based on the IMF’s Special Drawing Rights (SDRs) that would create a multipolar system that shares the burdens—and benefits—more broadly.³⁰

SDRs do have some clear drawbacks. The IMF had issued only \$32 billion of SDRs up until last year when the G20 agreed to an additional issuance of \$250 billion in response to the crisis. Even with this increase, SDRs will comprise just 4 percent of total official reserves and only governments and central banks can hold these instruments. That said, it is quite possible to address these issues, including through the private sector creating its own synthetic SDR instruments. So there is no

³⁰ *Reform the international monetary system*, Dr Zhou Xiaochuan, Governor of the People’s Bank of China, March 23, 2009; United Nations, *Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System*, September 2009.

fundamental reason why SDRs cannot become a more significant part of the global exchange rate system in the future.³¹

Short of systemic reform, a number of proposals have also been aired that centered on the desire to see a greater degree of policy coordination in the exchange rate system, perhaps using the G20 as the platform. This may resemble some of the negotiated exchange rate arrangements in the 1980s.³² In addition, several proposals based on the Tobin tax have been made, with a view to curbing excess currency volatility. The frequency of government intervention in foreign exchange markets in recent months together with a flurry of serious reform proposals suggests that the exchange rate system is reasonably fluid at the moment.

Indeed, the absence of a clear financial benefit to either the United States or the Eurozone from being a reserve currency suggests that there may be significant support for some reform to the current set of global exchange rate arrangements, so as to share the costs and benefits more broadly. Economists such as Fred Bergsten have already sparked this debate in the United States and we expect the discussion to continue and to broaden. The findings of our analysis indicate that it is likely we will see more serious attention paid to reform proposals such as the SDR, exchange rate policy coordination, and the like over the next several years.

We do not yet have a specific view on the most likely end-point for the global currency framework. It may be that the current system is able to function tolerably well over the next decade or so, with tensions eased—and gradual evolution undertaken—through an ongoing diversification of reserves and relatively orderly, agreed-on movements of exchange rates to address the global financial imbalances.

But we do believe that there is more uncertainty in the reserve currency system than today's dollar dominance and the lack of a clear near-term challenger might initially suggest. To the extent that the reserve currency system experiences significant change in the coming years, this will have significant implications for the business environment and for the competitiveness of companies.

Companies may argue that grand schemes about global financial architecture are the preserve of politicians and none of their business. But exchange rates that are substantially out of line with economic fundamentals coupled with currency volatility will generate real economic costs. Whether and how the world resolves the reserve currency issue or not is therefore very much the business of businesses.

31 John Williamson, *Understanding Special Drawing Rights*, Peterson Institute for International Economics, Policy Brief 09–11, June 2009; John Williamson, *Why SDRs could rival the dollar*, Peterson Institute for International Economics, Policy Brief 09–20, September 2009.

32 In the 1985 Plaza Accord, the governments and central banks of the world's leading industrial nations pledged to coordinate a managed depreciation of the dollar against the yen and the mark. In two years, the dollar depreciated by 50 percent against the yen. In 1987, the Louvre Accord was struck to stabilize the dollar after this decline.

Methodology appendix: Framework for estimating the costs and benefits of reserve currency status

In this appendix, we describe the data, methodology, and analysis that support our initial assessment of the costs and benefits of being a reserve currency issuer. As we engage experts on this work, we will continue to refine the underlying analytical methods and assumptions.

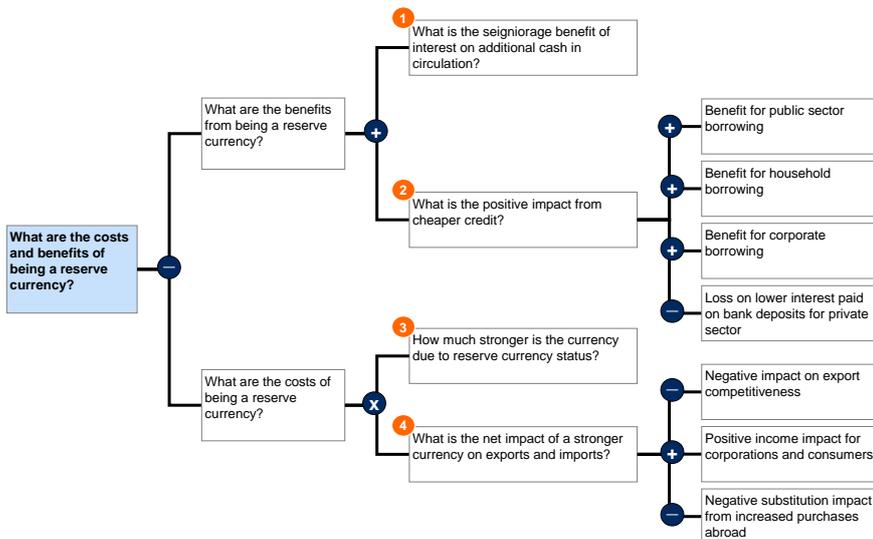
Our analysis comprises a series of partial equilibrium analyses examining short-term first-order effects, rather than a general equilibrium analysis that captures dynamic effects. Although a full general equilibrium analysis may be more robust, we nonetheless believe that the approach we have taken is easier to understand, generates more intuitive insights, and clearly highlights the major issues.

We have identified two categories of benefit and one major cost category associated with reserve currency status. The first benefit is the seigniorage income from additional currency issued, which is effectively an interest-free loan for the monetary authority. The second benefit is lower borrowing costs due to more readily available capital, both for the public and private sectors, offset by the lower interest received on bank deposits.

The main cost of reserve currency status is the exchange rate impact on trade-exposed sectors—in particular, the negative effects of a stronger currency on the competitiveness of the export and import-competing sectors, partly offset by a positive effect for consumers and companies of cheaper imports (Exhibit 11).

Exhibit 11

Framework for costs and benefits of reserve currency status



SOURCE: McKinsey Global Institute analysis

We begin by estimating a first-round financial effect. In addition, we calculate a GDP effect by employing various academic estimates of the relationship between the relevant macroeconomic variables and GDP. We calculate the costs and benefits of reserve currency status over two periods. Our baseline estimates are from July 2007 to June 2008. We also calculate the costs and benefits over the “crisis period” of July 2008 to June 2009.

1. Seigniorage benefit

Seigniorage revenue is generated through the process of issuing currency. This process creates what is effectively an interest-free loan from the currency holders to the central bank who issues it. Our approach is to first estimate the entire value of the seigniorage revenue and then estimate the proportion of this value that is attributable to reserve currency status.

We estimate the value of the interest-free loan from issuing currency by multiplying the base of physical notes and coins in circulation by the government risk-free rate. The calculated amount represents the market rate of interest the government would otherwise have needed to pay on its liabilities.

For the United States, we take the interest rate on a 20-year inflation-adjusted Treasury bond as the risk-free rate. The currency data are from the Federal Reserve. Our estimates are consistent with previous estimates of the value of the seigniorage benefit and with other possible methods of calculation.³³

For the Eurozone, we use data from the IMF’s International Financial Statistics (IFS) for “national currency.” This series very closely matches data from the ECB for “currency in circulation.” The long-term inflation adjusted interest rate is calculated on the basis of the 10-year nominal rates, adjusted for inflation, as reported by Bloomberg.

To estimate the portion of this value directly attributable to reserve currency status, we use the portion of currency in circulation outside the United States or the Eurozone as a proxy. For the United States, the Federal Reserve estimates that about half of issued dollars circulate outside the United States, and we have scaled the estimate of total seigniorage income by this amount. For the Eurozone, the ECB’s annual report for 2008 estimated that nonresidents held 20 percent of currency notes and coins in that year.

Finally, to convert this seigniorage income figure into a GDP impact, we assume that this seigniorage revenue enables greater fiscal spending or tax reductions and then apply a fiscal multiplier of 1.5. This assumption is reasonable given that, in the United States, the Federal Reserve transfers the seigniorage revenue to the US Treasury on a quarterly basis. In the Eurozone, the ECB transfers the seigniorage revenue to the national central banks.

Although there is a wide range of estimates, the IMF suggests that a rule of thumb for large developed economies is a multiplier of between 1.0 and 1.5.³⁴ In addition, a 1.5 multiplier is an approximate average fiscal multiplier estimated in a Moody’s Economics study for the United States in 2008.³⁵ We use the same fiscal multiplier—1.5—

33 Manfred J. M. Neumann, *Seigniorage in the United States: How Much Does the U.S. Government Make from Money Production?* St. Louis Federal Reserve, 1999; Elias Papaioannou and Richard Portes, *Costs and benefits of running an international currency*, European Economy, Economic Papers, 348, European Commission, November 2008.

34 Antonio Spilimbergo, Steve Symansky, and Martin Schindler, *Fiscal Multipliers*, IMF Staff Position Note, May 20, 2009.

35 Mark Zandi, *A Second Quick Boost from Government Could Spark Recovery*, Congressional testimony, July 24, 2008.

for both the United States and the Eurozone given that both are large, developed economies. For the years in question, we believe it is appropriate to use a fiscal multiplier given the amount of spare productive capacity in both the US and Eurozone economies.

2. Cost of capital advantage

The first issue here is to assess the impact on the cost of capital due to reserve currency status. Specifically, how do the incremental capital inflows due to the reserve currency status of the United States and the Eurozone impact the cost of capital in the two locations?

Previous MGI research has estimated the impact of foreign capital inflows on the cost of capital using estimates provided by a recent academic study by Warnock and Warnock.³⁶ Using the coefficients produced by this study, MGI estimated that net foreign purchases of long-term US Treasuries and government agency bonds reduced 2006 interest rates on these government securities by 68 basis points relative to a situation in which there were no net foreign purchases.

We have updated these earlier estimates on the basis of 2007, 2008, and 2009 data from the US Treasury on Foreign Portfolio Holdings of US Securities.³⁷ Foreign long-term Treasury holdings have increased significantly as a percent of GDP over the past few years. Using the same coefficients as for the previous analysis, we estimate that the cost of capital effect has increased from 68 basis points in 2006 to 74 basis points in 2007, 81 basis points in 2008, and 90 basis points in the first half of 2009.

These estimates of the cost of capital effect of foreign capital inflows are in line with other estimates. Estimates of 50 to 100 basis points are common, with several researchers estimating numbers on either side of that range (Exhibit 12).³⁸

However, only a portion of this estimated cost of capital advantage is due to the reserve currency status of the United States. For example, there are significant foreign holdings of UK government bonds that will generate some cost of capital benefit to the United Kingdom, despite the fact that sterling is not a reserve currency. To arrive at the reserve currency effect more directly, we estimate the effect of purchases of US Treasuries by foreign governments and public sector agencies (including sovereign wealth funds) only.³⁹ This reduces the estimate to 45, 54, and 60 basis points in 2007, 2008 and 2009 respectively. To translate this into our baseline and crisis-year periods, which do not cover calendar years, we take the appropriate averages of these annual numbers.

36 Francis E. Warnock and Veronica Cacadac Warnock, *International Capital Flows and U.S. Interest Rates*, Governors of the Federal Reserve Board, September 2005; cited in *The New Power Brokers: How Oil, Asia, Hedge Funds, and Private Equity Are Shaping Capital Markets*, McKinsey Global Institute, October 2007 (www.mckinsey.com/mgi);.

37 These data are available at <http://www.treas.gov/tic/shla2008r.pdf>.

38 See for example F. Garzarelli, *How much is Asian buying worth?* Global markets research daily, Goldman Sachs, December 9, 2004; B. Kasman and H. Malik, *The Asian currency-policy link to US interest rates*, US fixed income markets weekly, J.P. Morgan, February 2004; P. Artus, *Quel est l'effet des interventions de change sur les taux d'intérêt à long terme des Etats-Unis?*, CDC IXIS Flash, 2004; B. S. Bernanke, V. Reinhart, and P. Sack *Monetary Policy Alternatives at the Zero Bound: An Empirical Assessment*, Brookings Papers on Economic Activity Economic Studies Program, The Brookings Institution, Volume 35(2004–2).

39 Based on an estimate that about two-thirds of foreign reserves are held by Asian governments, sovereign wealth funds, and oil-exporting countries, as estimated by MGI in *The New Power Brokers: How Oil, Asia, Hedge Funds, and Private Equity Are Shaping Capital Markets*, McKinsey Global Institute, October 2007 (www.mckinsey.com/mgi).

Exhibit 12**Estimates of the effect of reserve accumulation on US Treasury yields**

Source	Approach	Estimated reduction, basis points 2006
Merrill Lynch	–	30
J.P. Morgan	–	30–50
Goldman Sachs	–	40
Edwin Truman	General estimate based on assumed equivalence of reserve accumulation and reduction of fiscal deficit	75
Patrick Artus	Regression of yield changes on fiscal deficit, current account and foreign net Treasury purchases	75
Ben Bernanke et al.	Regression of yield changes on intervention estimates, interpretation of yield disequilibria as a response to demand shocks	50–100
Bill Gross	–	100
Banque de France	Error correction model: estimating the long and short-term relationship between Treasury yields, fiscal deficit and measures of foreign official and foreign private net Treasury purchases	125
Stephen Roach	–	100–150
Nouriel Roubini et al.	General estimate based on correction of conventional estimates taking into account possible downward biases stemming from methodological limitations to statistical analysis	200
McCauley (BIS)	Regression of yield changes on changes in foreign central banks' custody holdings of Treasuries with the US Federal Reserve System	Significant, but unstable and short-lived relationship
McKinsey Global Institute	Apply Warnock and Warnock (2006) coefficient estimate of net currency inflows to interest rates, to adjusted Treasury data on foreign purchases of long-term government bonds by central banks/sovereign wealth funds	45

Note: Dash (–) indicates that the method used for the estimate has not been published.

SOURCE: Eurosystem 2006; McKinsey Global Institute analysis

To calculate the annual benefit from lower interest payments, we have applied this cost of capital advantage to three categories of borrowing. The first is the entire base of government borrowing (federal, state, and local) using data from Federal Reserve Flow of Funds data. The second is household borrowing, again using data on outstanding stock of liabilities from the Federal Reserve's Flow of Funds.

The third is company borrowing, which we divide into two component parts. We start by applying the cost of capital benefit to total small and medium-sized enterprise (SME) borrowing (defined as firms employing less than 500 people). We obtain the data on SME borrowing from the Federal Reserve's Survey of Terms of Business Lending.

Global companies, however, are better able to access dollar-denominated debt and can therefore benefit from a lower cost of capital even if they are not a US company. This ability of non-US companies to access the lower cost of capital in the United States reduces the extent of the relative benefit obtained by the United States. However, there is ongoing home bias in borrowing—90 percent of US company borrowing is dollar-denominated, while only about 20 percent of European company borrowing is in dollars, according to Dealogic data. To reflect this partial access of non-US firms to dollar-denominated debt, we apply the cost of capital advantage to 50 percent of the outstanding stock of company bonds, from BIS data.

On this basis, we have applied a 50 percent weighting, assuming that there is a partial, rather than full, benefit to US companies from the reserve currency status of the United States.

In calculating the household and SME benefit, we have assumed that it is appropriate to use the full cost of capital advantage (i.e., to assume that there is full pass-through of the lower government borrowing rates by banks to household and company borrowing rates). There is a 98 percent correlation between 30-year residential mortgage rates and 30-year Treasuries over the past 30 years, which suggests that this assumption is reasonable.

Similarly, we assume that this cost of capital discount also reduces the interest earned on bank deposits by households and companies on a 1:1 basis. We obtain the bank deposits data from the Federal Reserve's Flow of Funds.

As a sensitivity analysis to test our government borrowing estimates, we have developed a simple vintage model for government borrowing that assumes that each year's cohort of sovereign bond issuance has a weighted average maturity of ten years (a calculation of the average maturity of outstanding bonds at the end of 2008, based on Dealogic data, is roughly ten years). Each year, the benefit of the lower interest rate for the government is a product of each previous cohort's remaining outstanding bonds multiplied by the risk-free rate in the original year of issuance. Our initial analysis suggests that the specific assumptions used in this model will not have a major effect on our current estimates largely because the majority of outstanding government bonds today were issued in the past few years.

For the Eurozone analysis, we have used an approximation from BIS on net foreign purchases of government bonds, combining data on foreign ownership of government bonds and the total stock of outstanding government debt. We then apply the same Warnock and Warnock coefficients that we used for the United States to derive an interest rate effect from inflows of foreign capital into government bonds. To arrive more directly at the reserve currency effect, we again restrict this to purchases of Eurozone government stock by foreign governments and government agencies.

Finally, we apply this interest rate effect to Eurostat data on aggregate borrowing for the government, household, and SME sectors. As with our analysis for the United States, we apply the 50 percent of the interest rate benefit to corporate bonds.

To estimate a GDP impact from the interest rate effect, we have relied on two academic studies that estimate the effect of interest rates on aggregate output. Julio Rotemberg and Michael Woodford estimate a one-year interest rate impact on output, controlling for inflation and unemployment.⁴⁰ As a second observation point, we use a 2003 study by R.W. Hafer, Joe Haslag, and Garrett Jones, which estimates a somewhat higher interest rate impact on output based on a separate time-series regression of output and real interest rates.⁴¹ The range of coefficient values between interest rate change and output percent change is between -0.3 and -0.6.

We have used an average of the interest rate-output coefficient estimated by these two studies. We then apply this estimate to our interest rate effect figure to derive a GDP effect for the United States. As a final check, this GDP effect estimate produces a result that, relative to our income effect estimates, implies a multiplier of around 2.5, which seems reasonable.

To estimate the relationship between interest rates and GDP in the Eurozone, we have used a 2008 study that estimates a coefficient of 0.5 percent for Germany and 0.3 percent for France and Italy.⁴² Given that these three countries represent roughly 70 percent of Eurozone output, we have applied the average coefficient between interest rate and output to all of Eurozone GDP. Just as we have done in the United

40 Julio J. Rotemberg and Michael Woodford, *An optimization-based econometric framework for evaluating monetary policy*, NBER Technical Working Paper 233, May 1998.

41 R.W. Hafer, J. Haslag, and G. Jones, *The effect of monetary policy on economic output*, Working Paper 0311, Department of Economics, University of Missouri, September 2003.

42 M.S. Rafiq and S.K. Mallick, "The effect of monetary policy on output in EMU3: A sign restriction approach," *Journal of Macroeconomics*, Elsevier, Volume 30(4), pages 1756–1791, December 2008.

States, we then apply this estimate to our interest rate effect figure to derive a GDP effect for the Eurozone.

3. Overvaluation of the reserve currency

The increased demand for the dollar because of its reserve currency status will place upward pressure on its average value. To get a sense of the extent of the overvaluation of the dollar, we have used estimates of the fundamental equilibrium exchange rate (FEER) calculated by William Cline and John Williamson at the Peterson Institute for International Economics.⁴³ The authors define the FEER “as an exchange rate that is expected to be indefinitely sustainable on the basis of existing policies. It should therefore be one that is expected to generate a current account surplus or deficit that matches the country’s underlying capital flow over the cycle, assuming that the country is pursuing internal balance as well as it can and that it is not restricting trade for balance of payments reasons.” The first year that these estimates were prepared was 2008 so we do not have a time series.

The authors estimate a 7.4 percent overvaluation of the dollar effective exchange rate in June 2008. We interpret this as suggesting that there is a 5 to 10 percent overvaluation of the dollar over the relevant period of analysis.⁴⁴ This average overvaluation estimate incorporates effects from other variables that impact exchange rates; i.e., there may be non-reserve currency related reasons as to why the dollar is higher or lower than its fundamental value. To respond to this potential for “noise,” we have created a ranged approximation of the dollar overvaluation.

The dollar is also exposed to further appreciation in times of crisis or stress because of the safe haven properties of a reserve currency. To estimate the effect of the crisis on the valuation of the dollar, we have relied on the observed movement in the effective exchange rate of the dollar between 2008 and 2009. The average value of the dollar in the first half of 2009 was 11 percent higher than its average value over the first half of 2008 (using BIS real effective exchange rate estimates). On this basis, we assume that there is a 10 percent appreciation value associated with being the dominant reserve currency effect in a crisis. The Peterson Institute’s FEER analysis shows the same 10 percent appreciation, based on an overvaluation estimate of the effective dollar exchange rate of 17.4 percent in June 2009—a 10 percentage point increase since June 2008.

To estimate a normal year currency valuation effect for the Eurozone, we have used the FEER June 2008 estimate that the euro is 4 percent overvalued. Interestingly, the euro has since depreciated on a trade-weighted basis, and the FEER June 2009 estimates the overvaluation has fallen to 1.2 percent.

4. Net impact from an overvalued currency

We assess the impact of this overvalued exchange rate in terms of three component parts: (1) a negative competitiveness effect on the export sector; (2) a negative competitiveness effect on the domestic sectors that compete with imported goods

43 William R. Cline and John Williamson, *Estimates of Fundamental Equilibrium Exchange Rates 2009*, Policy Brief 09–10, Peterson Institute for International Economics, June 2009; and *New Estimates of Fundamental Equilibrium Exchange Rates*, Policy Brief 08–07, Peterson Institute for International Economics, June 2008.

44 This is in the same range as other estimates. An IMF study estimated an overvaluation of the dollar of around 9 percent. See Peter Isard, *Equilibrium Exchange Rates: Assessment Methodologies*, IMF Working Paper 07/296, December 2007.

and services; and (3) the positive income impact on consumers, in terms of a cheaper price of imported goods and services.

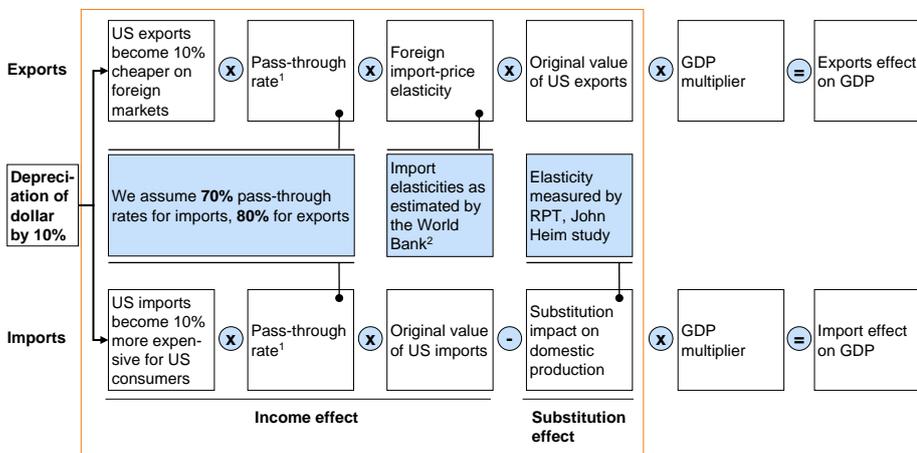
We use an MGI US current account model to estimate the impact of the exchange rate on exports. This model multiplies the change in the dollar exchange rate against a matrix of estimated foreign country import-price elasticities of 30 product categories for 100 trading partners with the United States (resulting in 3000 estimated elasticities). We take these data from a 2004 World Bank study.⁴⁵ We have updated the elasticity matrix across all values proportionately based on changes in the aggregate elasticity estimates between 2004 and 2008 (Exhibit 13).

Exhibit 13

We use import-price elasticities to analyze the impact of currency overvaluation on the economy

US EXAMPLE

 Included in our income effect analysis



1 Assumes that companies do not pass on the entire increased cost from exchange rate changes.
 2 Based on World Bank estimates of 3,000 import elasticities (30 product categories for 100 countries) in 2004, adjusted based on updated 2008 aggregate elasticity estimate from Kee and Nicita, 2008.

SOURCE: *The US Imbalancing Act: Can the US Current Account Deficit Continue?*, McKinsey Global Institute

These elasticities incorporate a pass-through rate—the extent to which exchange rate changes translate into price changes for the consumer.⁴⁶ Pass-through rates may vary between zero, where the importer or producer absorbs the full cost of exchange rate changes, and 100 percent in the case that importers or producers pass on to customers the full price change from the exchange rate depreciation in order to maintain the same profit margins.

Previous studies have found that exporters often absorb a substantial portion of exchange rate movements in the short term, particularly those that export to the United States, and that pass-through rates for the United States are 42 percent for imports and 46 percent for exports. However, over the course of a year this pass-through effect may increase as it becomes more difficult for companies to absorb the

45 H. L. Kee, A. Nicita, and M. Olarreaga, *Import Demand Elasticities and Trade Distortions*, World Bank Working Paper WPS3452, 2004.
 46 The pass-through rate for exports is obtained from Robert Vigfusson, Nathan Sheets, and Joseph Gagnon, "Exchange Rate Passthrough to Export Prices: Assessing Cross-Country Evidence," *Review of International Economics*, Volume 17, Issue 1, pp. 17–33, February 2009. The pass-through rate for imports is obtained from L. Goldberg and E. Wiskel Dillon, "Why a Dollar Depreciation May Not Close the U.S. Trade Deficit," *Current issues in economics and finance*, Volume 13, Number 5, Federal Bank of New York, June 2007.

change. For this reasons, we apply a pass-through rate of 70 percent for imports and 80 percent for exports.

To give a sense of magnitudes, we estimate that a 10 percent appreciation in the dollar would lead to an \$85 billion reduction in US exports. This is very close to other estimates. For example, Martin Baily and Robert Lawrence estimate that a 10 percent dollar appreciation would lead to an \$83 billion reduction in exports.⁴⁷

For imports, we have taken the pass-through rates discussed, multiplied by the change in dollar exchange rate, and applied this to total US imports. This represents the total income benefit from cheaper imports to the entire economy, including both households and companies.

We then subtract a substitution effect based on the amount of domestic production that is crowded out due to increased consumption of cheaper imports; i.e., import-competing sectors become less competitive with a stronger currency and lose income and market share. The estimate of the size of this substitution effect is based on an elasticity empirically measured by John Heim.⁴⁸

These estimates capture only the first-order effect of an elevated exchange rate. Over longer time horizons, this may be an over-estimate to the extent that resources from these sectors are re-employed elsewhere in the economy. Although this labor may be less productive in other parts of the economy, the economic impact will be less than our numbers suggest. However, in times of high unemployment—as is the case in the United States at the time of publication—this displaced labor may not be re-employed so readily, and so the cost may be higher.

In the Eurozone, we use Eurostat historical data to calculate aggregate export elasticities. We employ estimates of Eurozone exchange rate pass-through rates to exports and imports from the same sources that we used for the United States. Finally, we assume the same substitution effect elasticity as that estimated in the United States.

To estimate a GDP effect from a stronger reserve currency, we have relied on academic studies that examine the effect of exchange rate movements on aggregate output. In the United States, we use estimates provided in two studies.⁴⁹

As a first triangulation point, we apply the estimated currency appreciation to a set of exchange rate-to-sector output coefficients from a paper by William Branson and James Love. We then scale these effects to Services, Construction, and other non-Manufacturing sectors based on the relative export elasticity of these sectors contained in MGI's US current account model. As a second triangulation point, we use a very similar exchange rate-aggregate output effect estimated by Dani Rodrik in his cross-country study. We then use the average from these two estimated GDP effects for the United States.

47 Martin Baily and Robert Lawrence, "Don't Blame Trade for US Job Losses," *McKinsey Quarterly*, 2005.

48 John J. Heim, "Does a Strong Dollar Increase Demand for both Domestic and Imported Goods?" *Journal of International Business and Economics*, Volume VII, Number 3, October 2007.

49 Dani Rodrik, *The Real Exchange Rate and Economic Growth*, revised October 2008; William Branson and James Love, *The Real Exchange Rate, Employment, and Output in Manufacturing in the U.S. and Japan*, NBER Working Paper W2491, February 1988.

In the Eurozone, we employ much the same approach, but instead we use exchange rate-sector output coefficients estimated by the ECB.⁵⁰

DESCRIPTION OF EUROZONE SCENARIOS

The first scenario is a baseline case, in which the euro continues to grow in importance as a reserve currency as it has over the past decade. The dollar remains the dominant reserve currency. By 2020, the euro would account for 36 percent of official reserves and the dollar 45 percent. Overall we assume global reserve growth to grow at the same pace as global GDP.

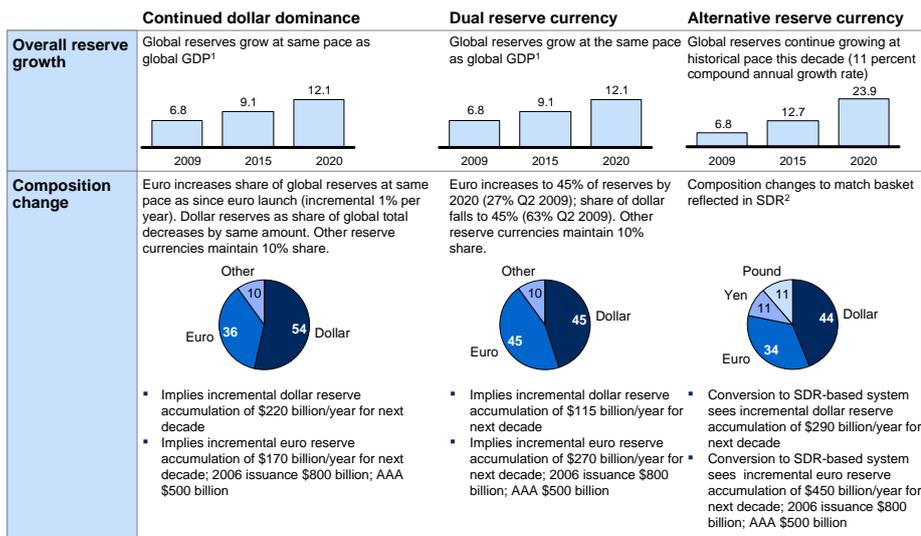
The second scenario is an accelerated process, in which the dollar and euro are equally important by 2020, both accounting for 45 percent of official reserves. This is a “dual reserve currency system.” Again, we assume that overall global reserve growth matches GDP growth.

The third scenario incorporates an even more aggressive outlook for the growth in the euro as a reserve currency. In this scenario, overall global reserve growth is 11 percent a year, the same rate as over the past decade, and reserve composition matches the current composition of the SDR (34 percent euro, 44 percent dollar, and 11 percent each for the yen and sterling).

To generate the estimated costs and benefits for these three scenarios, we have scaled the seigniorage, borrowing, and trade effects based on the magnitude of net capital inflows implied in the scenarios. In addition, we have scaled these effect based on expected real GDP growth out to 2020 in the Eurozone, using macroeconomic scenarios compiled by McKinsey’s Center for Managing Uncertainty (CMU) at McKinsey as well as Oxford Economic Forecasting (Exhibit 14).

Exhibit 14

MGI examined three reserve currency system scenarios



1 We use macroeconomic scenarios from the Center for Managing Uncertainty (CMU), McKinsey & Company.

2 Special Drawing Rights.

SOURCE: McKinsey Global Institute analysis

50 Elke Hahn, *The Impact of Exchange Rate Shocks on Sectoral Activity and Prices in the Euro Area*, European Central Bank, Working Paper Series 796, August 2007.

BASELINE

The implicit counterfactual that we use as the baseline for our assessment of the costs and benefits of reserve currency status for the United States is a situation in which the United States has no reserve currency status. In lieu of the dollar as a reserve currency, all other reserve currencies increase as a share of the global total proportionately in such a way that all currencies appreciate against the dollar equally. The implication of this assumption for our analysis is that we consider most of foreign inflows to be a result of reserve currency status, relative to the baseline described.

It is difficult to think of an alternative counterfactual that is more plausible. We could assume that the euro or the SDR was the reserve currency were the dollar not occupying that place. However, this is a subjective matter and complex to specify, so we continue with the zero baseline assumption. Although this assumption is not fully satisfactory, it at least has the advantage of simplicity.

