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Living in Interesting Times: The Economics of a Chinese Currency Attack

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What really matters . . . is the strength of the currency. Britain has nuclear weapons, but the pound is weak, so everyone pushes it around.

—John F. Kennedy

Several large near-peer competitors, such as Russia and China, have amassed large levels of dollar-denominated foreign exchange reserves. This raises concern that these states could deliberately sell off assets to harm the dollar's value. Currency attacks have historically been a part of warfare, and the recent advent of nation-states that have large reserves suggests it is possible the United States could face this threat. Contemporary public discussion has often lacked depth and been at one of two extremes: either (1) China could destroy the United States if it chose to sell off its treasuries, or (2) the Chinese would lose so much they would never undertake a currency attack. This article takes a detailed look at China's economy to determine the plausibility of a currency attack against the United States.

There are many conflating economic issues surrounding a currency attack, such as the perceived overvaluation of the dollar and its status as the world's primary reserve currency. The analysis herein suggests that large dollar reserves are sufficient to enable a currency attack, independent of the valuation of the dollar or its status as the world's reserve currency. The economic reasons for China to hold large foreign exchange reserves are central to our conclusions; these are found to be independent of any malicious intent towards the US dollar.

A currency attack on the dollar is plausible, with possible devastating effects if not effectively countered. However, an attack is extremely improbable due to the costs an attacker would face and can be effectively countered

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with adequate preparations. Given the speed of modern financial markets, these preparations must be made in advance; it is doubtful an ad hoc response would be either a sufficient or an effective deterrent.

As Chinese imports to the United States have dramatically risen, the value of China's currency is increasingly contentious, with Congress periodically threatening trade sanctions unless China's currency, the *renminbi* ("people's currency"), is revalued.[1] While the *renminbi*'s value is controversial due to its alleged impact on US jobs and trade deficit, another currency issue is emerging as perhaps even more serious: the large dollar-denominated reserves held by China's central bank, the Peoples Bank of China (PBOC), could be sold in an attack on the US dollar. China's state media refer to this as the "nuclear option," and it has even President Bush talking. He is not alone; the subject can yield over 2.5 million hits on Google.[2] Yet finding a rigorous analysis is difficult; most discussions resort to a superficial "that would never happen" or "China could destroy us." This article addresses that shortcoming by providing an economic review of a currency attack and what can be done to prevent one.

Sterilization ensures that dollars coming into China do not lead to inflation. As Chinese exporters receive dollars in exchange for goods, they are required to deposit those with a state bank, which the PBOC purchases with *renminbi*. To avoid the *renminbi* being used by the banks as additional reserves (which would expand the money supply and lead to inflation), the PBOC sells "sterilization" bonds to the banks to soak up the excess liquidity. This process is used by many of the Asian tigers to prevent their currencies from rising against the dollar without creating widespread internal inflation.

The issues of currency manipulation and attack are related; the process of *sterilization* used by China to avoid currency appreciation leads the PBOC to hold large dollar reserves, which could be used to attack the value of the dollar. Chinese investment in dollar assets lowers US interest rates but increases US dependence on foreigners.[3] While Japan has held large dollar reserves for quite some time, it is a US ally. The last decade's commodity boom and dramatic growth of East Asia, in concert with reduced US savings, has driven near-peer competitors, such as Russia and

China, to acquire large dollar denominated foreign exchange (FX) reserves as well. The dollar would be significantly pressured if China, Russia, or the Gulf Coordination Council (GCC) countries decided to sell their dollar FX reserves or sovereign wealth fund (SWF)[4] dollar assets in favor of alternative reserves (euro, yen, etc.).

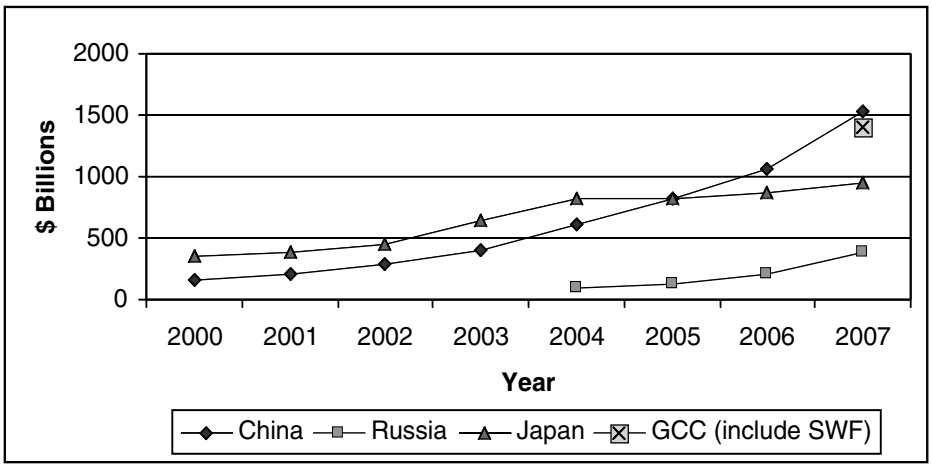

Figure 1. Foreign exchange reserves. Capturing FX data accurately is notoriously difficult, as many states consider it a state secret. Further, official reserves often are only partially in dollars (estimated 60–70%). The data presented here were obtained from a variety of online sources, including the IMF, US Treasury, and China's SAFE (State Administration of Foreign Exchange), and should be mainly used in a qualitative sense. These data should be sufficient for the purpose intended—simply to show the significant growth in the last few years that in absolute terms would enable a currency attack. Further, the one datum point shown for GCC countries includes SWF assets.

Historically, the most effective currency attack arguably occurred during the Suez Canal crisis in 1956 when, for a variety of reasons, both Britain and France were interested in taking over the canal and causing problems for Egypt's president Gamal Abdel Nasser.[5] They joined forces with Israel and attacked Egypt in October 1956. The United States, however, was against this action and instead pushed for a peaceful resolution to the conflict. It led a vote in the United Nations demanding withdrawal, and the New York Federal Reserve Bank began quietly selling pounds. The Soviet Union also hinted at selling reserves, and Britain's reserves quickly began to dwindle. Not only was Britain unable to convince the United States to cease pressuring the pound, the United States also would not even allow Britain access to its own reserves on deposit at the International Monetary Fund (IMF). Faced with no good options, Britain agreed to a cease-fire and the crisis was over. The United States forced Britain to abandon its

goals in Egypt by attacking its currency, a discreet move that quickly accomplished its objective. Still, an attack on the dollar would be different, given the size of the US economy and the dollar's world reserve currency status. Yet, the advent of states accruing large dollar reserves may make a currency attack against the United States a viable tool of economic statecraft.

America's enemies see dollar vulnerability leading to American decline. Iran's president Mahmoud Ahmadinejad and Venezuela's Hugo Chavez have repeatedly lobbied OPEC to cease pricing oil in dollars, with Chavez boasting, "Naturally, by the crash of the dollar, America's empire will crash."[6] Former US comptroller general David Walker notes that many countries with large FX reserves are not allies and could act against US interests.[7] Former treasury secretary Lawrence Summers calls this a "balance of terror," since both the United States and China could significantly damage the other by changing the status quo.[8]

China is often the straw man threat in future-conflict scenarios, with some foundation. China's rapid growth, increasing military spending, and need for strategic resources suggest that it will have the power and potentially the appetite for future conflict. Then there is Taiwan. Yet there is promise that with careful engagement, China could become a constructive world leader. Nonetheless, this article focuses primarily on China's potential to initiate a currency attack. China has the largest dollar reserves and is likely to continue as an economic flashpoint as long as global trade imbalances persist.

The probability of a currency attack on the dollar is low but plausible, and if not effectively countered, potentially devastating. Further, action now could minimize the impact. To reach these conclusions, the nature of a currency attack is reviewed in the next section, to include discussion of many conflating economic issues (reserve currency status, overvaluation of the dollar, etc.). Subsequent sections summarize how and why a state might conduct a currency attack, other large-dollar-holding states' reactions to an attack, and possible actions the United States could take to minimize the impact.

Fundamentals of a Currency Attack

Taiwanese elections were widely seen as a referendum on independence, with China threatening "grave consequences" for Taiwan

> *with any unilateral declaration. In response, the US pre-positioned two carrier task forces in the region, and quietly told China that any disagreements must be solved through peaceful negotiation. China warned the US not to interfere in domestic Chinese issues . . .*

A review of currency theory basics will assist in understanding how a sale of large dollar reserves may harm the United States. The US dollar has a *flexible exchange rate*—the government allows market forces to determine the dollar's value. While the United States rarely intervenes in currency markets, there are limits to a true market price—both internal and external. Internally, the Federal Reserve must keep one eye on the dollar in conducting monetary policy; too low a dollar could stoke inflationary expectations. Externally, the value of a currency is always "against what," and competing currencies are often managed carefully.

For example, the dollar's exchange rate in terms of yen is not a pure market result since the Japanese government manages the yen's value in some trading range to support its export economy. The dollar's value is determined primarily by US trade and financial flows, and like any price, is a function of supply and demand. In the long run, trade flows are the primary factor in currency valuation.[9] While price-level effects explain

With **flexible exchange rates**, a state's currency is actively traded against other currencies in markets to determine its value. A flexible exchange rate allows a country to have an independent monetary policy. With **fixed (or pegged) exchange rates**, a currency's value is fixed against some standard (gold, another currency, or a basket of currencies) by government purchase or sale of its currency. A country must keep sufficient reserves to buy its currency if necessary to maintain the peg. Monetary policy must support the value of the peg and is not independent. Most previous currency crises occurred when a country's exchange rate was fixed but monetary policy supported domestic objectives (e.g., to stimulate growth) rather than maintaining the peg. These conflicting objectives forced the government to exhaust its reserves attempting to maintain the official exchange rate. When the reserves are gone, devaluation is the only option.

much of long-run currency valuation, other explanatory factors include a state's preferences for domestic goods over foreign goods, its trade policies, and its productivity. In the short run (which may be for several years), a currency's value is mainly determined by financial flows, which are driven by investment rates of return. Theory suggests the only difference between countries' interest rates is due to expected changes in the exchange rate over the time horizon of the investment (for similar risk levels).[10] Changing expectations allow long-run factors to come back into play; when trade policies change or trade balances are different than expected or productivity jumps or slumps, expectations of the future exchange rate change. In the short run, therefore, a currency's value is determined by (1) changes in interest rate differentials or (2) changes in expected future currency value (driven by long-term factors).

How the dollar would respond to a fire sale of US assets is related to its underlying value when attacked. If overvalued, a large sale would tend to rapidly accelerate the underlying pressures for a new equilibrium and could result in large swings in the currency's value. Conversely, an

The **law of one price** suggests that any identical commodity should trade at the same price in all locations (after adjustment for transportation and transaction costs) and is the starting point for understanding currency valuation. For example, if a Coke costs one dollar in the United States but only 0.5 euros in Europe, then the exchange rate should be $2/euro, or €0.5/dollar. If the dollar's exchange rate actually were $3/euro, there would be an opportunity to profit by buying Cokes in the United States and shipping them to Europe (abstracting from shipping and transaction costs). The excess supply of Cokes produced in Europe would only be eliminated when the exchange rate returned to $2/euro. In the overall economy, this becomes the theory of **purchasing power parity (PPP)**, which extends the law of one price to all prices by comparing price levels. Yet, while PPP can be evoked to partially explain long-term currency values, it is almost useless as a short-run or day-to-day predictor. See Frederic S. Mishkin, *The Economics of Money, Banking, and Financial Markets*, 5th ed. (Boston: Addison-Wesley, 1998), 171.

undervalued currency would see significantly less depreciation. Despite the dollar's recent sharp fall, the United States may still be vulnerable. In one noteworthy study of industrialized countries that experienced a balance-of-payments crisis, the crisis began after the adjustment process was already underway.[11] Even absent any fundamental imbalance, a large sale of dollar reserves could cause a sharp adjustment.

One interesting stylized fact concerning flexible exchange rates is that they may stay within some narrow band or trend for long periods of time and then adjust sharply to a new band or trend. The dollar's value might be strong for quite some time, like the early '80s, and then suddenly change course, as occurred in the latter '80s. This lack of smooth adjustment suggests the dollar could be fundamentally misvalued for quite a while, and when the market does correct, it does so dramatically. Rapid currency changes can cause large adjustments in the real economy as market participants are forced to adapt. Many currency crashes have occurred suddenly, even when contemporary theorists had warned that fundamentals necessitated an exchange rate correction.[12] Given the reality of government intervention in currency markets, it is not surprising to see such sharp adjustments.[13]

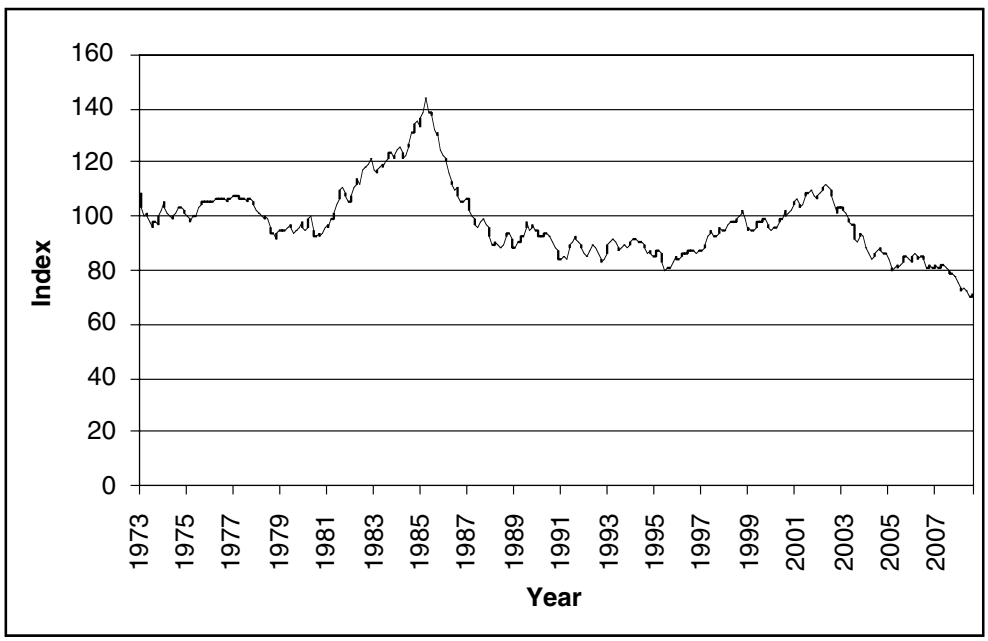

Figure 2. Major currency dollar index

As the US *current account* (CA) exploded to over 6 percent of gross domestic product (GDP) in 2006, many economists concluded the dollar

was overvalued and needed to depreciate to reach a sustainable CA balance (commonly thought to be ~3 percent of GDP). Large trade deficits leave foreigners with more dollars than they might want to hold in their portfolios. As they sell dollars to rebalance their portfolios, the dollar's value goes down. How overvalued the currency is depends on the assumptions made,[14] and estimates of required depreciation can vary widely—between 15 and 50 percent in real terms.[15] It is not clear yet from the dollar's large fall in 2007 whether it will stabilize or go lower, as the effects on trade only occur with a lag. If the dollar were overvalued, it would exacerbate the effects of a currency attack. Moreover, the recommendations for solving the current trade imbalances are all appropriate to mitigate risk of and damage from a currency attack.

The current account, the financial account, and the capital account make up the balance of payments and sum to zero, by definition. If a state has a CA deficit, it must have a capital and/or financial account surplus.

Current Account + Financial Account + Capital Account = 0

In practice, the United States has large CA deficits due to its poor balance of trade, which is by far the largest component of the current account.

CA = Balance of Trade + Net Factor Income from Abroad + Net Unilateral Transfers

Dollars flow from the United States to purchase foreign-made products, such as oil or manufactured goods. The dollars return in the capital and/or financial account as foreign investors purchase US securities and make investments in US assets, keeping the balance of payments equal to zero.

Some fear a currency attack could precipitate a run on the dollar and endanger its role as the world's reserve currency. Several factors enable a currency to serve as a reserve currency. First, it should be widely used for

exchange of goods and services. Since most states want access to the large US domestic market, they need dollars to facilitate trade. Second, a reserve currency should come from a country (or countries) that have deep and liquid financial markets to provide a safe return on reserves. Finally, a fiat reserve currency is ideally backed by a government with a history of protecting its value and a politically independent central bank.

The dollar's dramatic drop in value since 2002 is seen by some as proof that its days as a reserve currency are numbered, but one must consider the long-run perspective and the potential competitors. The most likely competitor, the euro, has large and deep financial markets and trades with much of the world. But it is not backed by any government and has no long history—not even a history to include a full boom/bust cycle where internal friction over policy could arise. The euro is increasingly a share of other states' currency reserves, but that share is still relatively small.[16] Further, as long as the United States is a large global trading partner, there will be demand for dollars to facilitate trade. Finally, many common fears of loss of reserve currency are overblown—the principle benefit to the United States is the interest savings associated with *seignorage*, and that amount is less than commonly believed.

Seignorage can be thought of as the amount of interest that a government would have to pay for the amount of currency it has outstanding; the more physical dollars people are willing to hold, the less T-bills a government has to pay interest on. Estimates of the interest savings associated with seignorage are ~ $25 billion per year—no small amount, but in a $13-trillion economy is less than commonly believed (and, of course, not all currency is foreign held). So to the extent foreigners are willing to hold physical US currency, the United States benefits from seignorage.

Contemporary concern over currency attack may be heightened since most financial crises of the last two decades were currency related. Yet those countries that suffered a crisis had a currency mismatch—their assets were denominated in their own currency, but their liabilities were denominated in others (usually dollars). When these countries had problems, nervous investors would withdraw their capital in dollars, unless prohibited by capital controls. Once a country's reserves were low enough, speculators

would begin to bet on devaluation, and a crisis would be just a matter of time. The US situation is radically different, as it has the "exorbitant privilege" of borrowing and paying back in its own currency.[17]

Implementing a Currency Attack

> *Despite China's attempt to intimidate Taiwan, voters overwhelmingly endorsed independence. It was less than a week until intelligence indicated China's missiles were being prepared to launch. When US naval forces moved in response on Sunday, markets across the world saw unprecedented selling of US T-bills on Monday . . .*

Conceptually a currency attack is easy to understand. If an attacker holds $100 million in US treasuries, it could sell those in any major financial market, deposit the cash dollar proceeds in a bank, and exchange the dollar-denominated bank deposits for bank deposits denominated in any other currency. Since all prices are determined on the margin, small changes in the amount sold can result in dramatically varying prices, depending upon the elasticity of demand. Even if the demand for dollars is very elastic, enough dollar sales could cause large swings in value. Indeed, the threat of dollar sales by a Chinese communist party official in 2007 led to a sharp drop in the dollar's value.[18]

What would be the real effect of a dramatic fall in the value of the dollar? While Americans are feeling that pain now with higher oil prices, a broader review shows less effect. Many exporters to the United States are unwilling to lose market share and will accept smaller profits when the dollar falls. The Federal Reserve estimates a fairly low pass-though rate of currency depreciation to the inflation rate.[19] Furthermore, imports are less than 20 percent of American GDP, limiting the overall effect. If the dollar's value were to remain low longer term, *expenditure switching* would result in a decrease of US consumption, while US exports would increase. Also, the first-order effects of a currency attack may be temporary in nature, especially if the dollar were fundamentally in balance prior to an attack. The Bank for International Settlements reports that as of 2007, daily dollar transactions of all types equaled $2.7 trillion, with cross-border claims equaling $30 trillion and total financial derivatives at $500 trillion![20]

The most plausible scenario for a currency attack to result in significant negative impact is based on market reaction. Market psychology is diffi-

cult to predict, but previous market dislocation experience suggests the reaction could be significant.[21] Further, the reaction would be away from US treasuries, opposite the usual direction. Market participants would set

> **Expenditure switching** occurs when a state whose currency appreciates (and imports become relatively cheaper) consumes more imports and exports less (since its exports cost relatively more). A state whose currency depreciates will see the opposite effect.

off on a mad scramble for alternative safe liquid assets, and the yen, the euro, and gold would likely see strong increases in demand. Global economic concerns would rise, as Europe and Japan would not be in favor of significantly stronger currencies.[22] It would be very possible to see a crash in world markets, with expensive markets taking the worst hit. The real fear is if there are contagion effects. Extreme scenarios are possible, similar to the collapse of the hedge fund Long-Term Capital Management in 1998, as a dollar crash is likely not factored into market models. While growth in global dollar trading somewhat mitigates the possible damage of a currency attack, some of the largest increase comes in dollar derivatives, which are growing 20 percent annually.[23] A dislocation in the dollar market could result in significant losses; it is unclear how sound the *counterparties* to derivative contracts are in the wake of unprecedented losses.[24] If they are unable to meet their responsibilities, there is a possibility of cascading cross-defaults, with consequent market meltdown.

> **Counterparties** is simply the other party opposite a hedge. For example, if you buy a put option to sell 100 shares of IBM, the person that sold the put is a counterparty. There is some risk that should you decide to exercise that option, the individual may not have the resources to purchase your 100 shares of IBM. While there are many protections for simple options, more complex derivatives have less oversight and more risk—with many times the leverage employed. Successful hedging of risk is dependent upon the ability of the counterparty to meet its obligation.

Potential Attackers—Why They Might Do It

While daily currency trading normally exceeded $3 trillion, the marginal increase of $300B on Monday caused a 5% drop in the value of the dollar, and interest rates rose a full point in longer-dated maturities. Rumors began to fly; obviously the Chinese were selling. But would the GCC countries try to sell in advance of a full-on dollar crisis?

Why would a state ever attack another country's currency? A broad answer is simply that it must believe an attack is the lowest-cost method to achieve a given objective and that the benefits exceed the cost. So what are China's costs to attack the dollar? The most obvious is that if China sold its dollar assets precipitously, it would receive fire sale returns on its investment and suffer huge losses, which might well harm China more than the United States. If China considered only profit and loss calculations, it would never take this action. Although states rationally optimize their behavior, the leadership of a state will have other considerations than simply maximizing profit. A state will equate marginal political and economic losses; to suffer a large economic loss associated with initiating a currency attack, the alternative political cost must be similar.[25] What political goal is worth it to China? Only its leadership would know; perhaps Taiwan?

To understand other costs that China must consider, we must appreciate why it has such large dollar reserves. When China began opening up in the late 1970s, it needed foreign exchange and technology; the preferred method to acquire these was through foreign direct investment (FDI).[26] The Latin American crisis of the early '80s heavily influenced Chinese thought; Chinese leadership subsequently demanded that Chinese companies balance their FX expenditures with their own FX revenues. Repeated global currency crises in the '80s and '90s showed the value of having large FX reserves, and China responded with policies that gained additional reserves. China began its peg to the dollar in 1994, largely in response to previous inflations that rocked its internal economy. Hong Kong pegged to the dollar in 1983 with very successful results, so a dollar peg seemed a natural way to stabilize. At the time, China did not have large CA surpluses; it was just as likely to import US capital equipment as to export. While China's economy grew robustly throughout the 1990s and subsequently, it was not until 2004 that CA surpluses started amassing at large rates (along with its dollar reserves). Prior to 2002, the expectation of currency change for China was in only one direction—depreciation.[27]

Yet 2003 and 2004 saw marked increases in China's balance of payment surpluses (capital account and current account); these surpluses have persisted even after the 2005 revaluation of the *renminbi* against the dollar.

The magnitude of these surpluses ($360 billion in 2007) requires large intervention by the PBOC on an almost daily basis to maintain the value of the *renminbi*.[28] As China receives dollars in exchange for its exports, the industries are required to deposit them with Chinese banks, which the PBOC then purchases with *renminbi*. To avoid the inflationary result of the *renminbi*, the PBOC raises bank reserve requirements and issues sterilization bonds to soak up the excess liquidity. China engages in sterilization to manage its growth as it struggles to shed inefficient state-run industries without causing mass unemployment that would accompany the operation of true market forces.[29]

Nonetheless, the result of this process is not in China's long-term interest. Current policies tend to favor export industries and lead to overdevelopment of export industries at the expense of domestic demand. This

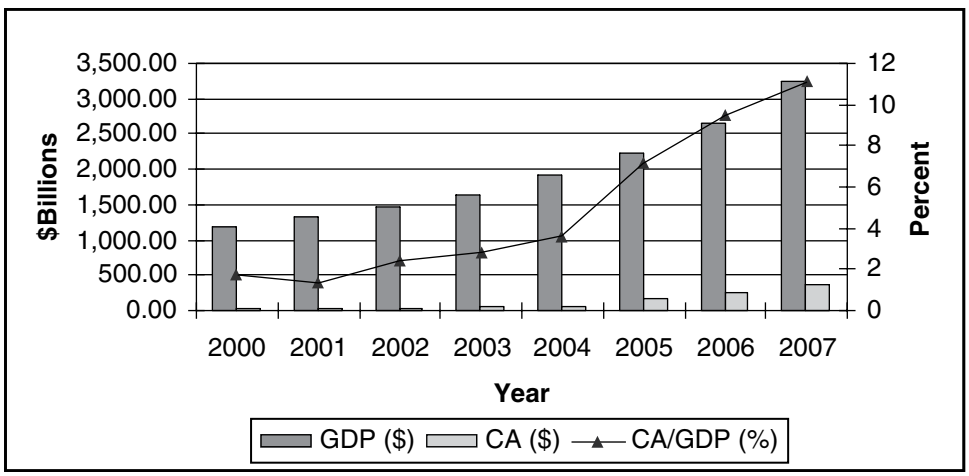

Figure 3. China's current account

limits domestic consumption to a level below where it would normally be and stimulates export production at a level greater than it should be, leading to suboptimal returns. Paradoxically, this malinvestment could result in the market determining the *renminbi* is overvalued, not undervalued![30] Further, sterilization delays the necessary inflation (or real exchange rate appreciation) China requires, forcing the beleaguered banking system to hold underperforming assets. Chinese economists lament that China pays high returns to obtain US FDI while receiving very low returns on its

US treasury investments.[31] Many analysts note this can only continue as long as the returns on US treasuries exceed what the PBOC must pay on its sterilization bonds; yet recent US interest rate cuts by the Federal Reserve have inverted this, forcing the Chinese, in effect, to pay to loan the United States money (on top of losses associated with dollar depreciation)! Since many of the PBOC's liabilities are non-interest bearing, it is still profitable on a cash flow basis although its implied capital losses exceed current interest income.[32] Clearly at some point, the Chinese will be forced to stop this policy.[33] China appears to be recognizing the costs of its current policy; the creation of the China Investment Corporation as a sovereign wealth fund is an implicit acknowledgement that China has sufficient reserves and should manage them more efficiently.[34] In addition, China requires reserves to deal with the recapitalization of its state-run banking system, which is known to be saddled with huge loan losses from state-run industries.[35]

With this background, we see that China has large dollar reserves (1) as a buffer against financial crises, (2) as the necessary counterpart to large current account/capital account surpluses, (3) because of capital controls, and (4) to facilitate banking system reform.[36] All these factors lead China to favor FDI supporting export industries. Consideration of the costs to China of a currency attack must include the implications to these objectives. First, China would be forced to suspend its dollar peg or suffer the same whipsaw effect it intended for the United States.[37] It is not clear how markets would respond to this, but it is clear that it would increase instability—something known to be abhorred by Chinese leadership. Second, China's overarching economic goal is to transition employment away from inefficient state-run industries towards export industries. Economic conflict with the United States would derail this important objective, as exports would be reduced (certainly to the United States). Further, a currency attack would almost certainly reduce FDI in China, especially if a financial contagion developed. Thus, a currency attack would not only eliminate China's dollar reserve position at a huge loss, it would also deny China the "insurance policy" of reserves to protect against crisis—an economic crisis that might very well occur with a currency attack on the dollar. Given China's careful crafting of reserves and how deeply it abhors internal instability, the probability of a currency attack seems extremely remote.

Beyond China: Reactions to a Currency Attack

Japan and the UK suffered huge losses in their dollar reserve portfolio. Japan's ambassador suggested to the US Treasury secretary that they could not suffer further losses, and would take whatever action necessary . . . .

How would other large dollar holders react to a currency attack or the threat of one? First consider Japan, which has ~$1 trillion in dollar-denominated reserves. What would it do? Selling would be very difficult, as that might precipitate a dollar run and destroy its portfolio's value. Would it buy? This is heavily influenced by the dollar's fundamental value. Are we in a stable, long-term equilibrium that a currency attack is only temporarily perturbing? If that were the case, many buyers would appear to take advantage of artificially low prices. If not, Japan, the UK, and others would still have an interest in preserving their portfolios' values; they may be willing to add to their positions to halt a dollar run.

Other actors to consider include Russia and the GCC countries, which are not traditional allies and could act in ways that are either stabilizing or destabilizing. From an economic calculus, they would want to preserve the value of the foreign exchange; they face the same considerations as the UK and Japan. However, it may be in their political interest to either hurt or help the United States when it is down. For instance, Russia has become increasingly belligerent as its fortunes have risen with commodity wealth. Dollar hegemony is emblematic of US hegemony in many respects; an attack on the dollar could reduce American influence worldwide and thereby further Russia's own national interest. Russia has already switched to a reserve basket with euros and dollars; it could certainly change the percentage in favor of euros at an unhelpful time. While Russia could lose money with a fire sale approach, two factors mitigate this loss. First, Russia has significantly less dollar reserves than China, so if it sold first Russia might be able to sell a larger portion before suffering serious capital losses. Second, Russia does not have China's level of structural dependency on the US consumer for its commodity exports.

While initial world reaction would likely blame China for the attack, as the economic implications began being felt worldwide, the United States could receive blame for its policies which created the large dollar debt. Had the United States kept its house in order, so the thinking may go, this would never have happened. It is possible that anti-American senti-

ment may rise globally, potentially hindering cooperative response to the crisis. While this analysis is speculative, it nonetheless suggests that any responses requiring international coordination need to be prepared in advance; it may be more difficult to achieve agreement in the aftermath of any attack.

Currency Attack Responses

> *Global stock markets began plunging; rumors suggested several large funds had engaged in dollar carry trades, and heavily leveraged this bet. The 10% drop in the dollar was forcing liquidation of assets, including equities. With the weakness in the dollar and equity markets worldwide, the Euro shot up over 25% in one day, and Gold went above $3000/oz for the 1st time. Wednesday saw stock futures down 30% in the US and more in other global markets. A financial contagion was in work; none of the quantitative models had assumed this 6-sigma event . . . .*

A currency attack is improbable but threatens potentially devastating results—if the attack is allowed to disrupt financial markets such that a contagion results. Yet given the large, deep markets in US treasuries, the United States can develop strategies to minimize the effect of large, simultaneous dollar sales.[38] There are at least three broad strategies to prevent or mitigate a currency attack, discussed below from the easiest to implement to the hardest. There is also a common theme; these strategies should be implemented immediately, as the speed of modern financial markets may not allow an ad hoc currency attack defense.

Internal US Coordination

First, the US government must prepare for a currency attack, to include exercising representative scenarios in a revised National Security Council (NSC) interagency crisis planning process. Scenarios should flesh out coordination between the DoD, the Treasury, the intelligence community, and the Federal Reserve, at a minimum. This coordination should cement information flow processes as well as war-gaming the specific responses and timing required to implement. For instance, which financial markets could be disrupted (locations and types), and which could be used to defend? Which agency interfaces with which market? What types of controls might be effective? Outright market closure (how long?)? Circuit breakers

(what thresholds?)? How would the Treasury and the Federal Reserve jointly act?[39] Second, scenarios should be developed for differing threat countries. The internal impact on some attacking states is drastically different from others; likewise, the magnitude of the threat. The United States clearly cannot have a one-size-fits-all currency attack response.

External Coordination

Japan, the EU, the UK, and other large dollar holders have a vested interest in helping the United States defeat a currency attack; we should enter into formal arrangements to handle "extreme" currency movements.[40] Japan will not want the capital value of its dollar holdings destroyed and will not want the yen to rise appreciably, nor will it want to see China gain further regional prominence. The EU will not want to see the euro appreciate significantly and will likely have some concern over Chinese hostility toward Taiwan. The UK is a traditional ally and a holder of large amounts of dollar-denominated assets; on both counts it will likely support the United States. Most nations will not find it in their interest to see the world's reserve currency in freefall.

US Structural Reforms

The United States should work towards eliminating existing global imbalances, beginning with the orderly adjustment of the dollar to a level that can be sustained over the longer term. Several factors can assist in this adjustment. First, the United States does not typically engage in direct currency manipulation, yet many of its trading partners do. The United States should engage these partners to end such manipulation. To the extent that markets determine the dollar's value, the less painful will be the necessary structural reforms.

The United States must also make other changes to its balance of payments. The US CA deficit is historically high and at levels that have led to currency crises in other countries (> 5 percent of GDP). While the dollar's world reserve currency status has postponed a crisis heretofore, the longer the United States waits to adjust, the more painful it will be. Existing CA imbalances are offset by capital and financial account surpluses, as must be the case in balance-of-payment accounting.[41] Foreign central banks have accumulated large dollar reserves, in part because the United States issued vast amounts of debt to finance deficit spending. If the United States weans off deficit spending, it would eliminate the primary source of dollar

accumulation and minimize the difficulties to US government operations should an attack occur. Mitigation of currency attack risk is yet another sound reason for the United States to get its fiscal house in order.

Further, the United States should implement policies to increase its private savings rate in addition to increasing public savings. By definition, a current account deficit must equal the difference between a country's investment and its national savings (the sum of public and private savings). If the United States wants to maintain a high level of investment and reduce its CA deficit, it must increase national savings. The US private savings rate went negative in 2005 and has hovered around zero since. There are many analyses as to why, including some that suggest that the low savings rate may not be a problem.[42] Without debating the proper measurement of the private savings rate or the causes of today's low rates, one can still see an obvious truth: if the United States consumes more than it produces, someone else is making up the difference and is building dollar reserves that could be used in a currency attack. Both fiscal and monetary policies should be adjusted to encourage private savings.[43]

Conclusion

We are now living in the long run. In contrast to the "deficits don't matter" mantra, run fiscal decisions that sent large dollar debt overseas are now resulting in major currency adjustments. The dollar's dramatic fall since 2002 is manifesting itself in higher prices for food, energy, and other commodities, and is beginning to correct the global imbalances in trade. As we live with the long run consequences of our previous fiscal policies, we must also deal with the national security implications as well. Currency attacks have historically been an integral part of any war effort. The emergence of states holding large dollar reserves suggests, that they could be factors in the future as well—we must be prepared. If a currency attack is not countered effectively, it could have a devastating impact on the United States. Nonetheless, actions can be taken now to minimize the impact, ensuring that the costs to the attacker would exceed any to the United States—turning a low probability event into a virtual zero-probability event. SSQ

Notes

1. For a detailed review, see Gary Hufbauer and Claire Brunel, "The US Congress and the Chinese Yuan," paper presented at the conference on China's Exchange Rate Policy, Peterson Institute for International Economics, Washington, DC, 19 October 2007, http://www.iie.com/publications/papers/hufbauer1007.pdf.

2. There were 2.7 million hits searching "China currency dollar attack." Obviously many of these are not directly related to the topic, but the point remains: this is an issue that generates much heat but little light. President Bush's comments can be found at http://www.breitbart.com/article.php?id=070809035534.0fweodz8&show_article=1.

3. Francis E. Warnock and Veronica Cacdac Warnock, "International Capital Flows and U.S. Interest Rates" (working paper no. 12560, National Bureau of Economic Research, Cambridge, MA, October 2006), 4, http://www.nber.org/papers/w12560. Warnock and Warnock estimate that absent foreign capital inflows, including China's significant contribution, rates on 10-year US treasuries would have been almost 1 percent higher.

4. SWFs raise a whole host of issues well beyond the scope of this article; nonetheless, the dollar-denominated assets they hold obviously could be sold and exchanged for alternative-currency-denominated assets, pressuring the dollar the same way as FX sales. In considering the ability to threaten the dollar in a currency attack, one should consider the amount of total dollar-denominated assets under the state's control that could be sold in the conduct of an attack, which would include any FX and SWF assets. If, as is likely, SWF assets are less liquid, they may be less helpful to an attacker.

5. Jonathon Kirshner, *Currency and Coercion: the Political Economy of International Monetary Power* (Princeton, NJ: Princeton University Press, 1995), 63–72. Special thanks to Jodi Liss for identifying this relevant source for use in my article. In addition, her paper on currency attack, "Making Monetary Mischief: Using Currency as a Weapon," *World Policy Journal*, Winter 2007/2008, is a valuable read, describing multiple currency attack strategies, contrasting with this dollar-centric review.

6. Hugo Chavez, comments made during a joint press conference with Iran's president Mahmoud Ahmadinejad, 19 November 2007, http://www.reuters.com/article/topNews/idUSL1918534820071119.

7. Suzy Jagger and Gary Duncan, "U.S. financial watchdog says economy at risk from 'nonally' bondholders," *Times Online*, 23 July 2007.

8. Lawrence H. Summers, "The United States and the Global Adjustment Process" (speech, Stavros S. Niarchos Lecture Institute for International Economics, Washington, DC, 23 March 2004), http://www.petersoninstitute.org/publications/papers/paper.cfm?ResearchID=200.

9. The law of one price suggests that any identical commodity should trade at the same price in all locations (after adjustment for transportation and transaction costs). In the overall economy, this becomes the theory of purchasing power parity (PPP), which extends to all prices. Yet, while PPP can be evoked to partially explain long-term currency values, it is almost useless as a short-run or day-to-day predictor. See Frederic S. Mishkin, *The Economics of Money, Banking, and Financial Markets*, 5th ed. (Boston: Addison-Wesley, 1998), 171.

10. Any differential in interest rates from the parity condition opens up an arbitrage opportunity; capital would then flow in the appropriate direction until parity is restored. While the empirical evidence is mixed on how well interest rate parity predicts actual exchange values, conceptually it is very appealing.

11. Caroline L. Freund, "Current Account Adjustment in Industrialized Countries," International Finance Discussion Papers 692 (Washington, DC: Board of Governors of Federal Reserve System, December 2000), http://www.federalreserve.gov/pubs/ifdp/2000/692/ifdp692.pdf.

12. Barry Eichengreen, "Notes on Dooley and Garber's 'Three Notes on the Revived Bretton Woods System' " (presentation to the Brookings Panel, 31 March 2005), http://www.econ.berkeley.edu/~eichengr/reviews/dooley_garber_brookingsmay26-05.pdf.

13. This is most obvious when a government tries to defend an overvalued peg but also when a floating (or flexible exchange rate) currency is in reality a "dirty" float. A dirty float means a currency is allowed to float within a prescribed trading range (usually only known to the monetary authorities).

14. Martin Baily suggests his estimates of necessary dollar depreciation (15–20% of real depreciation from January 2007 levels) are lower than others due to his review of the data that suggests the so-called Houthakker-Magee effect is lower than predicted. Martin Neil Baily, "How Large a Dollar Adjustment to Reduce the US Imbalance?" (presentation, joint Bruegel, KIIEP, and Peterson Institute Workshop on Adjusting Global Imbalances, Washington, DC, 8–9 February 2007, paper revised 19 March 2007), http://www.petersoninstitute.org/publications/pb/pb07-4/baily.pdf.

15. For example, Obstfeld and Rogoff suggest a 35-percent depreciation in the Real Effective Exchange Rate in Maurice Obstfeld and Kenneth S. Rogoff, "Global Current Account Imbalances and Exchange Rate Adjustments," Brookings Papers on Economic Activity (BPEA) 2005, no. 1 (2005): 67–123. Goldstein suggests a depreciation of 15–25 percent; see Morris Goldstein, "Renminbi Controversies," *Cato Journal* 26, no. 2 (Spring/Summer 2006): 253. Countervailing views suggest that the there is no need for a near-term depreciation, given global capital portfolio choices; see Michael Dooley and Peter Garber, "Is it 1958 or 1968? Three Notes on the Longevity of the Revived Bretton Woods System," BPEA 2005, no. 1 (2005): 147–87. Further, Edwards notes that many smaller industrialized states that had a current account reversal saw much smaller depreciations than models suggest; see Sebastian Edwards, "Is the U.S. Current Account Deficit Sustainable? If Not, How Costly is Adjustment Likely to Be?" BPEA 2005, no. 1 (2005): 211–71. Nonetheless, the consensus seems to be that the US dollar was overvalued in 2007; significant depreciation since then may or may not have enabled the dollar to achieve equilibrium.

16. The dollar still had over 60 percent share of total reserves at the end of 2007, with the euro less than 30 percent. Economic blogger Brad Setser argues that while relative dollar share is declining somewhat (and less than commonly thought, due to changes in currency valuation of assets), one should note that absolute dollars are increasing as global reserves. See http://www.rgemonitor.com/blog/setser/archive/2008-01/5/20/. See also Reuven Brenner, "The U.S. Dollar and Prosperity: Accidents Waiting to Happen," *Cato Journal* 26, no. 2 (Spring/Summer 2006): 317–32.

17. As French president Charles de Gaulle repeatedly lamented during the 1960s.

18. James Fallows, "The $1.4 Trillion Question," *TheAtlantic.com*, 15 January 2008.

19. Economist Diego Valderrama found that when the dollar depreciated 19.1 percent between 2002 and 2004, non-oil import prices only increased by 4.1 percent, although there could be some additional rise due to lagged effects. Diego Valderrama, "Does a Fall in the Dollar Mean Higher U.S. Consumer Prices?" Federal Reserve Bank of San Francisco Economic Letter, 13 August 2004, http://www.frbsf.org/publications/economics/letter/2004/el2004-21.html.

20. Ryan Stever, Christian Upper, and Goetz von Peter, "Highlights of International Banking and Financial Market Activity," *BIS Quarterly Review* (December 2007): 19–31, http://www.bis.org/publ/qtrpdf/r_qt0712.pdf. Edwin Truman goes farther, suggesting this growing differential between reserve assets and private transactions minimizes the impact of FX sales; a currency attack

is therefore very improbable. Edwin M. Truman, "Postponing Global Adjustment: An Analysis of the Pending Adjustment of Global Imbalances" (working paper WP05-06, Institute for International Economics, Washington, DC, 2005), 24, http://www.petersoninstitute.org/publications/wp/wp05-6.pdf.

In addition, "home bias," the trend favoring domestic investment over foreign investment, has been decreasing steadily; global foreign-owned assets rose to $74.5 trillion in 2006. This trend would tend to counteract any concerted selling by one party; increasingly, other foreign buyers are available to fill the gap. See Diana Farrell et al., "Mapping Global Capital Markets: Fourth Annual Report," McKinsey Global Institute, January 2008, http://www.mckinsey.com/mgi/publications/Mapping_Global/index.asp.

21. Interestingly, many market observers blame Treasury secretary Jim Baker's comments on the need for the dollar to fall in value as triggering the "Black Monday" sell-off in October 1987.

22. Japan is widely known to manage the value of the yen within a range. While the euro may not be managed, there has been considerable angst, led by France's president Nicholas Sarkozy, over the recent rise in its value. He cautioned it could lead to "economic war" in a speech to the US Congress.

23. Stever et al., "Highlights of International Banking," 25.

24. Witness the current concern with monoline bond insurers after the subprime sell-off. It is still an open question whether these insurers will be able to fulfill their counterparty responsibilities, should losses increase. Clearly their capital base is much too small to cover the potential losses (~1 percent of exposure).

25. If a state has a two-goal utility function composed of political (P) and economic (E) goals, and more of one goal comes at the expense of the other, then the state will balance the marginal benefit of political goals with the marginal benefit of economic goals. Let U = f (E, P) where E + P = 1. By substitution, U = f (1 - P, P). Taking the derivative with respect to P to maximize utility yields the expression: $\partial U/\partial E^*\partial E/\partial P + \partial U/\partial P = 0$, or $\partial U/\partial E^*(-1) + \partial U/\partial P = 0$, or $\partial U/\partial E = \partial U/\partial P$, where $\partial U/\partial E$ is the marginal benefit of economic goals and $\partial U/\partial P$ is the marginal benefit of political goals.

26. Yu Yongding, "Global Imbalances: China's Perspective" (presentation, Institute for International Economics conference on Global Imbalances, 8 February 2007), 12–13. http://www.iie.com/publications/pb/pb07-4/yu.pdf.

27. John Greenwood, "The Future of the Renminbi" (panel discussion, Cato Institute's 25th annual monetary conference: Monetary Arrangements in the 21st Century, 14 November 2007).

28. As with the FX data, I have strong reservations about the accuracy of this data; there are many conflicting estimates, and China is not always willing or able to accurately report economic data. Once again this is sufficient for the qualitative assessment in this article.

29. For an excellent review of some of the relevant issues, see Wendy Dobson and Anil K. Kashyap, "The Contradiction in China's Gradualist Banking Reforms," BPEA 2006, no. 2 (Fall 2006): 103–48.

30. Greenwood, "Future of the Renminbi," 8–11.

31. Yu, "Global Imbalances," 18.

32. See Brad Setser's blog, "What to do with over a half a trillion a year? Understanding the changes in the management of China's Foreign Assets," 15 January 2008, http://www.rgemonitor.com/.

33. Goldman Sachs calculates that China is losing ~$4 billion per month due to the interest rate differential. See http://china-economics-blog.blogspot.com/2008/01/us-rate-cuts-puts-pbc-under-increasing.html.

34. In a private conversation between the author and a senior member of the PBOC, the official acknowledged that China has too many dollar reserves; the Chinese would like to have less overall dollar reserves than they have currently once their financial transformation is complete.

35. Yu highlights another important factor: local politicians are rewarded for how much FDI they can attract. Given current institutional preferences, this FDI is steered towards export industries.

36. Capital controls prevent many Chinese from being able to diversify their portfolios. This leads some economists to suggest that when capital controls are relaxed, there may be such a desire for diversification out of *renminbi* that its value falls relative to the dollar; this is yet another reason for China to have larger than normal FX reserves. Dooley and Garber, "Is it 1958 or 1968?" 165.

37. Given the larger role of imports and exports in China's GDP, it could face larger economic disruptions.

38. This does not imply there will not still be significant costs, such as higher financing costs of US debt, just that these costs would be relatively small (and likely small enough that any potentially hostile state would not consider the damage nearly large enough to compensate it from its own internal losses).

39. This recommendation is consistent with Kao's broader suggestion that the US military include more economic analysis in its contingency planning, with increased interagency coordination. Philip Y. Kao, "Future Approaches to the Economic Instrument of Power," *Joint Force Quarterly*, no. 43 (4th Qtr. 2006): 50–53.

40. Peter Bofinger, a prominent German economic advisor, suggests just such an arrangement. Matthias Streitz, "The Strong Euro is Destroying Jobs," *Spiegel Online International*, 21 November 2007, http://www.spiegel.de/international/business/0,1518,518717,00.html.

41. Some analysts suggest this is simply the result of the United States being an exceptionally good place to invest, but Setser argues that central bank accumulation of dollar reserves (such as by China, Russia, and GCC countries) is largely the cause rather than private long-term investment. See Setser's blog discussion for a review of this point, http://www.rgemonitor.com/blog/setser/233036. For a different perspective, see Richard N. Cooper, "Living with Global Imbalances: A Contrarian View," http://www.petersoninstitute.org/publications/pb/pb05-3.pdf.

42. See Charles Steindel, "How Worrisome Is a Negative Saving Rate?" *Current Issues in Economics and Finance* 13, no. 4 (May 2007): 1–7, http://www.newyorkfed.org/research/current_issues/ci13-4.pdf.

43. Monetary policy has specifically reduced incentives to private saving: low interest rates discourage saving, and monetary growth has led to higher asset prices, further discouraging saving. Negative real interest rates between 2002 and 2005 were most unhelpful in this regard.