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Hegelian Macroeconomics

The Dialectics of Global Imbalances

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Abstract

Traditional narratives of external imbalances have focused on the analysis of national accounts, trade flows, and financial flows. They have generated two opposing views of the current situation of the world economy: on one side, a prudent, if not pessimistic view considers large imbalances as evidence of problems with the international monetary and financial system, and symptoms of domestic distortions (mainly in the United States and China). On the other side, a relaxed, if not optimistic view suggests that global imbalances are not anomalies but simply the predictable outcome of a world with increasingly globalized financial flows in search of the right mix of risks and returns. The former view prescribes that the two largest countries in the world rebalance their economies to avoid the potentially painful cost of disruption and adjustment. The latter contends that global imbalances will be corrected through time by the normal functioning of market forces.

This paper offers a critical analysis of these competing explanations of the United States-China imbalances and suggests a way of reconciling them. Starting with an exploration of the accounting frameworks that underpin any discussion of current account deficits and surpluses, the paper argues that China and the United States have become economically so interdependent that fears of any abrupt change in their current Nash equilibrium situation may be exaggerated. The paper also uses Hegel's parable of the development of self-consciousness to explain the dynamics between the two countries. Hegel may not have been a great philosopher of history but his analysis of lordship and bondage (also known as the master-slave dynamics) provides a good framework for analyzing the dialectics of recognition and acknowledgement that currently characterizes the macroeconomic relationships between the United States and China.

This paper—a product of the Policy Review unit, Development Economics—is part of a larger effort in the department to study global imbalances and their implications for development strategies. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at cmonga@worldbank.org.

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The Dialectics of Global Imbalances

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"Pretend inferiority and encourage his arrogance."
Sun Tzu, *The Art of War.*

"Before you embark on a journey of revenge, dig two graves."
Confucius

1. Introduction

At this year's Paris Book Fair where I presented a small book of reflections, I was called upon by Alexandre Lacroix, the editor of the glamorous *Philosophie Magazine*, to write a piece for his journal on the convoluted macroeconomic relationship between the United States and China, from the perspective of philosophy. At first, I was taken aback by the request, which sounded both exotic and unusual. Sensing my surprise and skepticism, the journalist insisted and suggested that I use Hegel's dialectics of lordship and bondage (also known as master and slave) to analyze the peculiar financial and economic dynamics between these two dominant countries. Although Lacroix seemed quite serious about his request, I did not think much about it, and respectfully declined the invitation. But it was a typical boring Parisian spring afternoon and I had little to do, except to sign a few books and politely answer unwise questions from a mostly uneducated audience. That left me with plenty of time to rethink about my exchange with the journalist. I eventually came to the conclusion that at least some aspects of his intriguing suggestion were worth pursuing.

This paper takes up Lacroix's challenge not from a purely philosophical perspective—though I will use Hegel's concept of dialectics to underpin the discussion in the latter part of my analysis—but by focusing on the issue of global imbalances (the existence of large, sustained current account deficits in some countries that are compensated by equally large and sustained external surplus in others). Macroeconomists typically view these issues through the prism of the United States-China relationship. There is a good reason for this: anyone reading the chapter on current account balances in the World Factbook (the flagship publication of the United States (US) Central Intelligence Agency, which should be required reading for all macroeconomists) is struck by two pieces of information: the top-ranked country in the world with the largest current account surplus in 2008 was China, with an estimated $426 billion. The lowest-ranking country (190 out of 190) was the US, with an estimated deficit of $673 billion.[1]

[1] See https://www.cia.gov/library/publications/the-world-factbook/rankorder/2187rank.html
The measure here is each country's net trade in goods and services, plus net earnings from rents, interest, profits, and dividends, and net transfer payments (such as pension funds and worker remittances) to and from the rest of the world during the period specified. These figures are calculated on an exchange rate basis, i.e., not in purchasing power parity (PPP) terms. Looking at

While the global imbalance question is complex and involves other large economies such as Germany or Japan, it is useful to focus on the US and China: they are currently the two most dominant national economies in the world; China will shortly pass Japan to become the world's second largest economy behind the US and the two together accounted for almost one-half of all global growth during the four-year boom prior to the current global crisis; they are the two largest trading nations; the US is the largest deficit and debtor country while China is the largest surplus country and holder of dollar reserves; and they are the leaders of the two groups, the high-income industrialized countries and the emerging markets/developing nations, that each now account for about one-half of global output (Bergsten, 2009).

The evolution of the US current account balance in recent years (Figure 1) and the accumulation of public debt have been subject to much debate. Economists have worried about the potential implications of the change of status of the largest economy in the world, from a creditor nation to a debtor nation. The rapid erosion of the US net external asset position has also raised concerns about the status of the dollar as the preeminent world currency. Expressing desperation, McKinnon recently noted that "economists have failed dismally to construct convincing theoretical models of why the seemingly endless US current account deficits are sustained by a seemingly endless willingness of the rest of the world to acquire dollar assets."

The main issue with large current account deficits is obviously their sustainability, that is, whether they will be met by sufficient, timely and affordable inflows of foreign capital. In the case of the US for instance, it bears on the questions of (i) the size of the financial obligations that the deficit reflects, (ii) the availability of income payments and receipts that will eventually be paid out of the economy's production—with the risk of reducing current consumption and investment, and (iii) the confidence in creditor nations or in the low probability of sudden swings in the mood of foreign investors.[2] Although much of the public debate over current account deficits tend to focus on their size, the dynamics underlying the numbers are more important. After all, these deficits are simply the results of many forces at play, in other words the reflection of the general

historical data as far back as 1890, Eichengreen (1987) found that current levels of U.S. deficits have no precedent.

[2] A current account is considered 'sustainable' at a point in time "if neither it, nor the associated foreign capital inflows, nor the negative net international investment position are large enough to induce significant changes in economic variables, such as consumption or investment or interest rates or exchange rates. Even if the current account deficit is sustainable by this definition today, its trajectory could still be creating future risks for the US and global economy." (Mann, 2002 : 134).

equilibrium interaction between many macroeconomic variables (national rates of saving and investment, fiscal, monetary and exchange rate policies, patterns of growth and international trade, etc.). Moreover—and this is one of the main arguments of this paper—these variable themselves reflect deeper macro-political and socio-cultural choices, which must be taken into consideration in the analysis of current account deficits.

Why is the US, the world's richest nation, borrowing heavily on international capital markets--rather than lending, as would seem more logical? And why is China giving credence to the Lucas Paradox[3] by using its excess savings to increase its claims and control on US assets, instead of pursuing potentially higher returns on investment in poor countries? Regardless of the particular lenses that they use to analyze the US-China imbalances (national income accounts, trade flows or financial flows), macroeconomists usually come to one of the following two opposite conclusions:

- Global imbalances represent an anomaly and a major threat to the stability of the world economy. First, they may reflect domestic problems or distortions (lack of social insurance, poor firm governance or financial repression in surplus countries and excessive public borrowing in deficit countries); or problems with the international monetary system and exchange rate regimes (large accumulation of reserves for self-insurance purposes). Second, they may lead themselves to significant domestic problems such as capital flows volatility, especially when the exchange rate is fixed. Action should therefore be taken to cut the US external deficit and China's external surplus. Both countries should adjust their saving rates (an increase in the US and a decrease in China). If one assumes that there is an upper limit to growth in China, an increase in the growth of domestic demand must be associated with a decrease in the growth of foreign demand, even not in the exact same proportion. This would require a change in relative prices—that is an appreciation of the renminbi vis-à-vis the dollar.[4]

- Global imbalances may not be as threatening as they appear because they reflect a general trend in world economic history and the structural changes associated with globalization. In a way, they are just the logical outcome of a world that is increasingly characterized by the increased integration of real

[3] Lucas (1990) wondered why capital does not flow from rich to poor countries despite the fact that the latter have lower levels of capital per worker.

[4] This view is dominant in both academic and policy circles. It has been articulated forcefully by Obstfeld and Rogoff (2007) and Blanchard and Milesi-Ferretti (2009).

and financial markets. The low U.S. saving hypothesis should be seen therefore as unconvincing, not least because the national account data underestimates savings by excluding purchases of consumer durables and expenditure on education and research and development from the definition, and because the U.S. current account deficit started in the 1990s—precisely when the external account balance swung into surplus.[5]

While these two opposing views often rely on some well-constructed theoretical and empirical underpinnings, they suggest a dichotomy that may not allow grasping fully the issues at hand. This paper offers a more nuanced view and argues that a more complete understanding of global imbalances requires a multidimensional perspective that more fully takes into account events beyond traditional macroeconomic variables. Global imbalances are neither just a temporary aberration that can be addressed through economic policy actions in the U.S. and China as suggested by proponents of the first view, nor are they only the result of globalization as implied by proponents of the second view. The paper uses Hegel's dialectics to analyze the opposing dynamics of the U.S. and China external balances. While agreeing with the need for the two most dominant global powers on the world economic stage (U.S. and China) to take corrective action, it also suggests that eliminating global imbalances will require structural changes—some of them well beyond the realm of economics—that may take a long time to materialize.

The remainder of the paper is organized as follows: Section 2 uses the basic accounting linkages to explain why traditional narratives of current account deficits and surpluses often lead to competing theories and conflicting results. Section 3 suggests a game-theoretic approach of the U.S.-China economic relationship based on Hegel's analysis of lordship and bondage, which explains the current situation of mutual dependence. Section 4 offers some concluding thoughts.

2. Traditional Narratives of Global Imbalances

The debate over global imbalances has been controversial, and at times confusing. On one side of the spectrum, there are those who lament the persistence

[5] See Cooper (2005). The low savings hypothesis also appears inconsistent with the still low nominal and real interest rates, even before the relaxation of monetary policy to combat the 2008-09 recession. Xafa (2007) notes that the U.S. national accounts data also exclude capital gains (e.g. on housing and financial investment) from the definition of savings, although they potentially raise future consumption.

of a large current account deficit in the U.S. and interpret it as the sign of a country living well beyond its means and therefore doomed to suffer negative consequences at some point in the future. On the other side, there are those who only see a current account deficit as the sign that foreigners are willing to invest in that country's firms, buy its Treasury obligations, bonds and stocks, hold its currency, and thereby making loans in exchange of purchases of imported goods and services. They view a large current account deficit as proof that the U.S. can attract investment from around the world by delivering high returns with better risk premium than others—a vote of confidence, the ultimate mark of trust in an economy that may have imbalances but is on the whole, well run. Good arguments can be made by both camps. In order to explore the issues at hand systematically, it is useful to first recall some of the basic accounting relationships that underpin international macroeconomics, and to assess the validity of the various lenses through which the issues are often discussed.

2.1 Brief Anatomy of the Linkages

The accounting frameworks for analyzing current account balances revolve around the three concepts of production, income and expenditures. Since the total value of output produced for any given country (Y) is also the total value of incomes paid out (GNP), let's start with the well-known national income identity for an open economy

$$Y \equiv (C + I + G) + (X - M) \tag{1}$$

where (C) is consumption, (I) is investment, (G) is government spending, and $(X - M)$ is net exports.

The value of incomes received by economic agents from the factors of production located anywhere in the world (GNP) equals the disposition of output in terms of total expenditures (consumption, investment, government spending), and whatever fraction of income is saved (S). To aggregate,

$$Y \equiv E + S \tag{2}$$

where is (E) is expenditure and (S) is saving. Combining equations (1) and (2) yields

$$Y \equiv E + (X - M) \tag{3a}$$

which can also be written

(3b) $$Y - E \equiv X - M$$

We also know that (GNP) includes gross domestic product (GDP, value of output produced in a country, regardless of whether factors or production are owned by residents or nonresidents) plus net factor payments from abroad (F); that is

(4) $$GNP \equiv GDP + F$$

This allows us to bring into the picture the current account, which is simply the difference between a country's total exports of goods, services and transfers, and its total imports of them. It reflects net payments (deficit) or net receipts (surplus) for goods and services. It is therefore useful to frame the current account in terms of its relationship with income and spending. Total receipts are constituted of the income received by residents, which is GNP and net transfers (NT). Total payments are the sum of expenditure on goods and services and transfers made. Therefore, one can write

(5) $$CA \equiv GNP + NT - E$$

The total income plus net transfers received by residents of any country is either consumed, saved, or paid in taxes. This gives

(6) $$GNP + NT \equiv C + S + T$$

with T as net taxes (taxes after all domestic transfer payments made by the government have been deducted). Total expenditure is the total of household consumption, government spending and investment spending by firms; substituting these identities in equation (5) yields.

(7) $$CA \equiv (S - I) + (T - G)$$

These identities provide a lot of insights to issues of external imbalances. Applying them to the US-China situation, one can derive from them the following observations:

- Looking closely at equation (3b), one can also see that net exports in China is only a reflection of the excess of national income over aggregate spending by domestic residents. The key lesson for the US is that an excess of imports over exports (a negative trade balance) only expresses the fact that

total spending exceeds national income. The implication is straightforward: the US-China imbalances reflect macroeconomic imbalances and any meaningful change in the situation will require rebalancing of income and spending in both countries.

- China's current account surplus reflects an excess of income over spending. To reduce it, the country will have to either increase its expenditures, or diminish its receipts. With a current account deficit, the US is obviously in the opposite situation. Any credible strategy to reduce external imbalances in both countries must be consistent with the accounting implications of the dynamics in the right-hand side of equation (5). Specifically, China's surplus will be reduced only if its investment rises relative to saving or if its fiscal position deteriorates (equation 7).[6] In other words, one of the following must happen: either the Chinese private sector saves more than it invests, or the Chinese government must collect more in net taxes than it spends.

- Also, because there is an accounting relationship between the fiscal position and the external balance, any change in the budget balance is reflected in the current account. This is particularly relevant for the US: a deterioration of the fiscal deficit must be compensated either by increased saving or by reduced investment to prevent a worsening of the current account deficit. But it would be misleading to identify any one of the balances in equation (7) and infer causality from the identity. They are simultaneously determined in a general equilibrium dynamics.

Quantifying the factors underlying persistent current account deficits and the direction of causality with some degree of certainty can be a complicated exercise. Besides a rigorous econometrically fitted model with precise estimated coefficients, it requires a credible counterfactual scenario that can be used for comparison—which implies some causal ordering of the simultaneously determined variables. Moving from these accounting identities to explore behavioral relationships among these variables is therefore the most challenging and controversial part of the debate. There are many different ways of understanding the dynamics of external imbalances, setting appropriate goals for surplus and deficit countries, and designing policies to achieve them.

2.2 Competing Theories and Conflicting Results

[6] This statement holds from the perspective of national income accounting. However, if the investment is used to build up production capacity in the tradable sector, the total output there will increase. Without a corresponding increase in domestic absorption, the increase in investment may eventually result in expansion of trade surplus. This was the case in China before 2008.

Current account deficits and surpluses can be approached in many different ways. The traditional narratives on the US-China imbalances are usually analyzed for each of the two countries from three perspectives: (i) a domestic perspective based on national income and product accounts; (ii) an international perspective based on trade flows; and (iii), an international perspective based on flows and holdings of financial assets (Mann, 2002).

2.2.1 The National Accounts Lenses

The first approach typically uses national accounts to describe how patterns of domestic savings and investment are linked to trade and current account balances. It starts with the identity reflected in equation (3a) that domestic production equals total spending plus the trade balance. The sources of savings in any given economy can therefore be said to correspond to the demand for financial capital. To examine the national accounts identity from the perspective of the sources and uses of funds, one must disaggregate foreign and domestic variables, and public and private variables: private savings plus capital inflows (foreign savings) through the current account or trade deficit must equal private investment and the budget balance:

$$S_p + (M - X) \equiv I_p + (G - T) \tag{8}$$

This formulation helps make the point that the US trade deficit reflects a higher level of spending than its domestic production. As a consequence, fiscal deficits fuel current account deficits through their effect on national saving. This is the well-known twin-deficits hypothesis: when a government increases its fiscal deficit—for instance by launching a fiscal stimulus package, by cutting taxes—domestic residents use some of their new income to consume more, causing national saving to decline. This trend in saving requires the country either to borrow from abroad or reduce its foreign lending, unless domestic investment decreases enough to offset the saving shortfall. Thus, a larger fiscal deficit is typically accompanied by a wider current account deficit.

The story seems quite logical. Yet, empirical evidence has been hard to find in the US case, not least because the link between fiscal and current account deficits is not as straightforward as the accounting identities would suggest. While the US fiscal and current account deficits seemed to move in parallel during the first half of the 1980s, things have changed substantially since the early 1990s, raising doubts about the twin-deficit hypothesis: The US fiscal deficit rose from 2.7 to 5 percent of GDP in 1980-1986 while the current account deficit increased from 0 to 3.5

percent of GDP during the same period. The explanation seemed clear: expansionary fiscal policies led to strong growth through domestic spending and increase in imports. At the same time, tight monetary policy and the large fiscal deficit led to high interest rates, which attracted foreign investment and strengthened the dollar. The end-result was a decline in competitiveness and a large current account. Surprisingly, when the fiscal balance turned into surplus in the 1990s, the current account continued to deteriorate. The contraction in fiscal policy did not lead to a reduction in domestic demand and a curtailing of imports. The lower fiscal deficit did not ease pressure on the cost of funds, lower interest rates, and induce a depreciation of the dollar—which would have been good for the current account. To the contrary, there was a significant appreciation of the dollar in the 1990s.

The US story is comparable to Japan's of the 1990s, when the evolution of the current account seemed inconsistent with the sharp decline in the country's fiscal balance—it was an example of private savings rising to compensate a deteriorating fiscal stance, to the point of leaving the current account unaffected. It also confirms results from various cross-country empirical studies that often fail to establish a clear chain of causality between the twin deficits, not least because they use data on a very small sample of countries, focused on short periods of time.[7] Such "anomalies" are hardly surprising since equations (1) through (8) have no causal significance. Because they are identities, all variables are endogenously determined as part of a general equilibrium outcome for the whole international economy. The three sectoral balances—saving-investment balance ($S - I$), the government deficit ($G - T$), and the trade or current account deficit ($M - X$) are in fact functions of many other variables such as national income, interest and exchange rates, etc.

The weakness of the twin-deficit hypothesis pertains to its definition of current account balances in isolation of changes in other influential variables such as public debt or the real exchange rate. A possible way of rehabilitating (at least partially) the twin-deficit hypothesis is to adopt a two-step analysis of the relationship between fiscal and current account deficits: first, one needs to look at the link between fiscal policy and national savings,[8] which itself is controversial:

[7] The literature on the subject is quite confusing. In an influential study, Miller and Russek (1989) found fiscal deficits to be the main determinants of trade deficits. Kim and Roubini (2003) and Gruber and Kamin (2005) either found no link between the two, or concluded that there was a link in the opposite direction of the one predicted by the twin-deficit hypothesis.

[8] Bartolini and Lahiri (2006) adopt a cross-country methodology for 26 industrial and emerging economies and find that each dollar rise in fiscal deficits is associated with an average rise in private consumption of 33 to 37 cents. While their finding supports the proposition that consumption responds significantly to fiscal policy changes, their estimated rise in consumption is smaller than the increase of 40 to 50 cents calculated by Bernheim (1987).

- A Keynesian approach would predict that expansionary fiscal policies lower national savings by increasing private disposable income and hence private consumption; if the economy is closed to external capital flows, reduced savings must be offset by reduced domestic investment and fiscal policy crowds out domestic investment by inducing higher interest rates. If the economy is open, domestic investment remains stable because foreign credit keeps interest rates stable.

- The Ricardian view would predict that fiscal stimulus packages (new public spending, tax cuts) financed through new public debt does not lead to significant changes in consumption or current account balance because private agent anticipate future tax increases to repay additional public debt and choose to save the windfall from the government.

The second step is to consider the implications of these fiscal policy effects on current account balances. One popular method consists of quantifying the link between fiscal policy and domestic investment, which allows an estimation of the required level of foreign financing needed to close the savings-investment gap. Yet, there again, so many factors affect investment behavior (productivity, domestic interest rates, foreign interest rates, etc.) that this strategy carries many risks.[9] A different line of enquiry consists of replacing consumption with the current account balance as the variable to be explained in regression equations. This substitution enables to estimate a direct link between fiscal balances and external deficits. It is pursued by Bartolini and Lahiri (2006). They find that each dollar rise in the fiscal deficit is associated on average with a 30 cent decline in the current account. Combined with their other finding that each dollar rise in the fiscal deficit leads to a decline in national savings of 33 to 37 cents, this suggests that changes in national savings are translated almost one-for-one in changes in current accounts, which implies that investment only has a weak relationship with fiscal policy.

Whether one believes in the twin-deficit hypothesis or not, the fact is that the causality chain often observed between the fiscal and the current account balances has been unstable in the U.S., most notably during the 1990s. The potential

[9] Economic theory identifies three main determinants to business environment: GDP growth, the rental cost of capital (the cost of purchasing and holding investment goods), and equity value, that is the market value of firms relative to their underlying capital assets typically denoted in the literature as *q* (when the stock market values firms and their future prospects highly, investments in physical assets are more profitable for firms than financial investments such as stocks repurchases, mergers and acquisitions). McCarthy (2001) presents an empirical forecasting model with these three key elements and others to study investment behavior in the US in 1995-2001 and finds mixed results.

explanations given for the breakdown (such as the emergence of the "new economy", which led to cost reduction, efficiency gains, and productivity enhancement and thus created a wedge between private savings and private investment), do not invalidate some other approaches to global imbalances.

2.2.2 The Trade Flows Lenses

The second popular approach to the analysis of current account deficits focuses on trade flows. Foreign investors do not automatically respond to changes in national accounts in deficit countries as may be inferred from the first approach. Chinese central bankers or Japanese pension managers have no obligation to invest in US Treasury bills to help America cover its current account deficit as implied by the previous discussion. That a country's imports far exceed its exports is a topic for newspaper headlines and a matter concern to many citizens and pressure groups (whose livelihoods depend on the viability of exporting and import-competing industries, trade unions, business groups, nationalistic politicians). Yet, specific trade-related factors cannot explain by themselves large and sustained current account imbalances, which are in fact determined by many other variables, including foreign and domestic incomes, asset prices, interest rates, and exchange rates. It is clear for instance that over-consumption (mostly of imported goods) and asset bubbles in the US during the period 2002-07 were partly caused by loose monetary policy. This obviously affected global imbalances.[10]

It therefore seems useful to examine the more fundamental driving forces that explain the flows of exports and imports of goods and services, and to understand their underlying dynamics and the various ways in which the exchange rate and GDP growth, both at the national and international levels, influence the current account. The conventional way of doing this is to rely on models that show how trade flows are driven by changes in relative prices and growth of national income.[11] This highlights the close relationship between GDP growth and real import and export growth.

Empirical studies following that path have confirmed that (i) exports grow faster when foreign income grows faster and when the relative price of exports to competing products in the destination market falls; and (ii), imports grow faster

[10] Lin (2008) argues convincingly that expansion of 2002-07 began with a bang – the bursting of the US tech-stock bubble in 2000-01, which had a substantial wealth effect on American households. To minimize the duration and depth of the ensuing recession, the Federal Reserve aggressively eased monetary policy by lowering he Fed funds rate or the discount rate 27 times between January 2001 and June 2003. While expansionary monetary policy averted a deeper recession by stimulating a boom in the housing market, it fueled a consumption boom.

[11] One such model is proposed by Marquez and Ericsson (1993).

when domestic income grow faster and when the relative price of imports to domestic products falls. Mann (2002) presents data about the US experience, showing that when the dollar depreciated sharply between 1986 and 1989, the relative price of American imports tended to rise, making domestic products more attractively priced in their destination markets. During that period, imports grew more slowly than would have been expected on the basis of US GDP growth, while exports increased more quickly than would have been expected on the basis of real foreign GDP growth alone.

Analyses of the US-China external imbalances too often neglect to take account of the difference in their stages of development and the implied difference in their product mixes. China currently produces and exports to the U.S. some basic necessity, labor intensive goods, which the US will not produce anymore. An appreciation of renminbi may reduce China's exports and trade surplus. But it may also lead to a higher trade deficit in the U.S. because the demand for such products in America is inelastic, and the U.S. would have to pay higher costs either for its imports from China, or from other higher-cost countries. Solving the external imbalances problem among the two countries may therefore a reduction in the U.S. trade deficit more than a decline in China's trade surplus.

Empirical studies, which are typically based on real-side models, also tend to focus exclusively on trade flows and to ignore capital flows and portfolio optimization. The adjustment process is assumed to work through the global reallocation of demand between tradable versus nontradable goods, and domestic versus foreign goods. Moreover, these studies have also led consistently to what can be called the puzzle of income asymmetry: whenever goods and services are aggregated, the US income elasticity for imports is much greater than the foreign income elasticity for US exports. This result, observed in many studies since Houthakker and Magee (1969), holds regardless of the estimation periods, datasets and econometric techniques used.[12] That intriguing asymmetry reflects the fact that changes in US income affect US imports very differently from the way changes in world income affect US exports. Its main implication is that even if the US economy and the world economy grow at the same rate in the foreseeable future, the US current account deficit will continue to deteriorate, unless there is a sustained depreciation of the dollar. While some researchers consider that the US income puzzle simply reflects gaps in knowledge (missing variables, failure to account for demographic shifts and capital outflows such as remittances that aggravate the current account deficit, etc.), the trade flows story is still unsettled.

[12] Hooper et al. (1998) found that the long-run elasticity of US exports with respect to foreign national income was 0.80, while the elasticity of US imports with respect to US national income was 1.80. That is quite an important gap.

2.2.3 The Financial Flows Lenses

A third approach to the analysis of US-China imbalances therefore focuses on international financial flows, their determinants and their signification. The main rationale often put forward for shifting the focus of the analysis from the current to the capital account is the increasing importance of financial market operations across boundaries, and the observation that they may have become the single most dominant forces fuelling globalization (Cooper, 2005). The trends are impressive indeed: for example, gross foreign purchases of foreign securities from US residents, topped $8 trillion in 2008. While the exponential trend in the gross value of international transactions has not yet rendered obsolete the two previous approaches (national accounts and trade lenses), it justifies the renewed focus of external imbalance analysis on issues such as interest rates in financial markets, differential rates of return, exchange rates, optimal portfolio allocation strategies, financial regulation, availability of innovative financial instruments, etc.

That third approach is broadly based on the view that external balance problems are primarily monetary in nature. Therefore, global imbalances should also be analyzed as symptoms of excessive money supply. There are several possible rationales for that view: first, conceptually, going back to equation (7), it is logical that any current account deficit could be suppressed through a sufficient contraction of the money stock, which raises interest rates, reduces public and private spending, contracts economic activity and induces declines in income and imports. Second, there are some direct links between the balance of payment deficit, foreign exchange market interventions and the money supply: when the central bank in a deficit country sells foreign exchange and receives in return high-powered money, that process automatically reduces the money stock. By contrast, when the central bank of a surplus country buys foreign exchange, it also increases the outstanding stock of high-powered money—a process that expands the money stock. It is therefore logical that some researchers would focus on the accounting linkages between the money supply and the external balance, and try to identify the financial variables that are the most relevant in any given situation.

The current account balance always equals the change in net foreign assets of any given country. In case of a surplus, it indicates the rate at which the economy is building claims on the rest of the world. In case of a deficit, it reflects claims being built by the world on the national economy. Because the change in net foreign assets itself equals the change in money stock minus the change in total domestic credit, one can write balance sheet identities to clarify the link between the financial sector, the government budget and the external balance:

(9) $$CA \equiv \Delta NFA$$

where ΔNFA is the change in net foreign assets for the entire country (central bank, commercial banks, the treasury, and the nonbank private sector). Analyzing the evolution of the current account balances in the U.S. and China from that perspective requires that one focuses on issues of money, credit, and deficit finance. For that purpose, it is convenient to highlight the change in the central bank's net foreign assets, often a major component of the total change in net foreign assets. One can write:

(10) $$\Delta NFA \equiv (\Delta M_2 - \Delta DC) + \delta$$

where ΔM_2 is the change in money stock, and ΔDC is the change in total domestic credit, and δ is the component of the net foreign assets that do not belong to the consolidated banking system.[13] Like all identities, equations (1-10) obviously do not tell anything about the behavioral relationships among the variables involved, nor does it show the many possible channels through which capital moves around the world. Moreover, the structural design flaw of a global financial system built around a single currency as the world's reserve: for surplus countries such as China to acquire and hold dollars, the US *must* run a sustained current account deficit. In other worlds, for the current global financial order to function, the US *must* in essence live well beyond its means.[14]

Given the constraints of equations (7) and (8), there is room for debate over how much influence deficit and surplus countries actually have in a globalized world of financial flows and international capital markets. There is little doubt that the emerging countries crises of the 1990s sparked a new insurance strategy from Asian countries, which consists of keeping their currencies artificially low to stimulate exports, and accumulating foreign reserves as precaution. This also

[13] To some researchers, equation (10) linking the current account deficit (the change in net foreign assets) to the change in M_2 minus domestic credit should be written simply as $NFA \equiv \Delta M_2 - \Delta DC$, which is an oversimplification. NFA here are for the consolidated banking system, not the whole economy. In particular, foreign assets include non-monetary assets like direct investment that are in no way the backing for monetary expansion. Countries do not have to run current account deficits to increase the global stock of their reserve assets, but they have to run balance of payments deficits (the sum of current and capital accounts). For most years until the 1970s, the U.S. ran current account surpluses, but balance of payments deficits.

[14] Triffin (1961) made a similar point when he wrote about the accumulation of dollars in Europe in the 1950s and argued that the international financial system carried the seeds of its own destruction. Wolf (2008) provides a rich and convincing update of Triffin's intuition.

allowed some of them to procrastinate on the implementation of politically difficult structural reforms of their economies.[15]

One could argue that the US had to increase consumer demand in order to absorb excess goods from China without suffering high levels of unemployment. Another way of looking at global imbalances from the perspective of equation (8) is to consider that the US Federal Reserve may have perceived the relatively low price levels in the US in the period 2002-2007 as a reflection of weak demand (instead of a reflection of the surplus of low cost goods from Asia), and kept interest rates low for a long period of time, which fuelled the assets and real estate bubble (Lin 2008). Capital flows may also have been attracted to the U.S. either because of its better growth record relative to other competing markets (say the Euro area or Japan), or because emerging markets could not offer similar levels of reliability in their savings instruments or investment opportunities.[16] Regardless of the explanation given to the rise of the US-China imbalances, the end-result has been a massive accumulation of dollars on the balance sheets of Asian central banks, followed by investment by these institutions in the American bond market. This process kept money flowing into the US, lowered long-term interest rates and created a spiral: it made domestic credit even cheaper in America, which became a sort of mega-bank, attracting short-term deposits from surplus countries and recycled them into risky assets (Monga 2009). Not surprisingly, the US's international assets and liabilities rose from some $5 trillion in 1996 to over $20 trillion in 2007.

This evolution set fears that the world's mega-bank could theoretically become vulnerable to a run, which would destabilize capital markets around the world. Yet, so far, the catastrophe has been avoided. While the flood of money both from abroad and from within may have overwhelmed the capacity of the US financial system to handle it—despite the heavy use of securitization and other exotic financial instruments—American consumers have been able to absorb excess exports from Asia, at the costs of high levels of debt.

In theory, there is always the danger that persistent deficits in the US can eventually be perceived to be unsustainable, which would dry up the inflow of

[15] From 1993 to 1996, wages in China rose from 50 percent of GDP to 54 percent but then beginning in 1999 and over the next eight years, declined to 40 percent of GDP (World Bank, 2008). This compares with about 56 percent in the U.S.

[16] Caballero et al. (2006) propose a portfolio balance model that analyzes the impact of shocks on global capital flows and interest rates. Their analysis suggests that U.S. assets have been underpinned by the economy's good performance and relatively high interest rates; also, the liquid and sophisticated U.S. financial market has been able to attract larger portions of cross-border flows seeking high risk-adjusted returns that emerging countries, where there are often much weaker property rights, stronger capital controls and macroeconomic volatility.

foreign capital—with the consequences of a collapse in confidence in the dollar and a high cost of capital. This explains the calls for the world economy to face the dilemma of external imbalances: by definition, Asian exports (mainly Chinese) must be reconciled with imports of the rest of the world (mainly the US). Strategies for achieving that goal are well known. Yet, they have so far seemed inapplicable in the U.S.-China situation.

2.3 Strategies for Reducing External Deficits: The Asymptotic Frontier

The lessons from accounting identities are straightforward: in order to reduce the US current account deficit—and the corresponding China surplus—less spending should be directed to US imports, and/or more to exports. This can be done either through adjustment policies that reduce the level of aggregate demand (Option 1), or through expenditure switching policies that affect the composition of demand (Option 2), or through a combination of the two strategies.

Option 1 is rarely an easy one, especially given its short-term macroeconomic costs and its potential political economy implications—it would imply a reduction in economic output growth in the US and a decline in demand for imports from China and elsewhere. As observed in 2007-08, lower American demand tends to create a global slowdown unless compensatory fiscal stimulus packages are implemented abroad. In principle, it is possible that a reduction in spending in the US could be matched by an equivalent increase in foreign demand sufficient to cover the country's deficit without perturbations in the level of economic activity. In reality, expansionary macroeconomic policies in foreign countries on the scale needed to compensate for declining US demand also carry serious inflationary risks and can be politically costly. Furthermore, few countries would have the fiscal space to sustain large stimulus packages.

By default, Option 2 is typically the least inconvenient. Still, it would involve a redirection of US domestic demand from cheap Chinese imports to products made in the US. If the government comes up with clever ways to induce that change, the switching of expenditures leads to a decline in domestic demand relative to total output in the US (due to higher total spending on US goods and services), which is likely to contribute to a reduction of the trade and current account deficits. From the perspective of the US and assuming that the country is willing to absorb the sociopolitical economic costs of giving up cheap imports, the major question then is how to use fiscal and monetary policy tools to smoothly induce these changes in consumption patterns.

There are two options for implementing expenditure switching policies: first, trade policy (higher tariffs, quantitative restrictions on imports, specific "Buy-

America"-type provisions in national stimulus packages or export subsidies) can be use to force changes in trade flows. But they often lead to retaliatory measures from trading partners. In May 2009 for instance, the US decided to impose new tariffs on steel pipe imports from China. A few weeks later, China retaliated by slapping new barriers on U.S. and European Union (EU) exports of some industrial chemicals used to make nylon and polyester resin. This prompted the EU in turn to restrict imports of steel pipe from China... It appears that the count of newly imposed protectionist policies has been on the rise recently.[17] Moreover, in a country with a flexible exchange rate system such as the US, the theoretical reduction in the trade deficit that might be gained from trade restrictions would be offset by an appreciation of the dollar in reaction to trade restrictions.

The second possibility, which is to induce a switching of expenditures through a real depreciation of the exchange rate, seems more realistic. But there are several possible ways to proceed, each carrying its own risks. The typical textbook recommendation would be to reduce the value of the dollar through a mix of macroeconomic policies (easing of monetary policy and tightening of fiscal policy, compensated by expansionary fiscal policies abroad). In theory, this could lower the value of the dollar without impacting negatively the pace of growth in the US, and lead to an improvement in the trade and current account balance. But besides the difficulty of orchestrating such a delicate coordination of policies across boundaries, the economic and political context in the US is not propitious to fiscal adjustment—especially one based on expenditure restraint. In order to battle recession and avoid a slump like Japan suffered in the 1990s, the US authorities have implemented a very aggressive fiscal policy, with large and costly new economic stimulus and financial stability plans. The trajectory of fiscal policy is unlikely to change soon given the size of entitlement programs, the projected cost of the healthcare reform and other programs under consideration such as a one-time payment to Social Security recipients and the extension of the home buyers tax break.

When fiscal correction is difficult to implement, the only option left is that of real exchange rate depreciation mainly through market mechanisms. There has always been a lively debate on whether a depreciation of the dollar is actually needed to achieve a substantial reduction of the US current account deficit in a world characterized by integrated capital markets. To this day, many economists and policymakers support the popular view that world imbalances could be remedied through increased demand in surplus countries and reduced demand in deficit countries without real exchange rate adjustment. That line of argument is

[17] Bown (2009) examines newly available data from the Global Antidumping Database tracking the worldwide use of trade remedies such as antidumping, countervailing duties, global safeguards and China-specific safeguards in recent months. He finds an increase in resort to these instruments.

based on the erroneous belief that global imbalances have little to do with exchange rates because a trade deficit is simply an accounting difference between investment and savings, period. It ignores the relative price effects of international transfers of resources, as explained by McKinnon: "With smoothly functioning capital markets, little or no change in the 'real' exchange rate is necessary to transfer saving from one country to another." (1984: 14)[18] In other words, with capital being available around the world and mobile across boundaries, savings-investment gaps are automatically reflected in trade balances, and this leaves no role for relative price changes. Such reasoning naturally leads to the conclusion that adjustments in trade and current account balances require changes in the real exchange rate only if the economy is closed to capital movements.

Is that actually the case? Let's imagine a two-country world with almost full employment where the US reduces total spending while China increases its spending by the same amount. Despite the mobility of capital, because China spends less on American goods and services at the margin than does the US, a redistribution of world spending from the US to China will reduce the demand for American goods and services at constant relative prices. In other words, most of the decline in US spending would be detrimental to sales of US-produced goods and services. One important reason for this is the fact that the price of Chinese products sold in the US also includes distribution, marketing, and overhead costs *in the US*. In the meantime, a much smaller fraction of the higher spending taking place in China will benefit American producers.

In the end, the net effect of the reallocation of spending in the two countries will lead to an excess supply of American goods and services, and excess demand for Chinese goods and services—others things equal.[19] One of three things must therefore happen: inflation in China, deflation in the US, or a depreciation of the dollar. Assuming that the People's Bank of China would not let a sustained rise in prices and that deflation is difficult to tackle because of the stickiness of prices in nominal terms,[20] then a lower relative price of US output is the necessary condition for reducing the imbalances. One can therefore conclude that changes in demand,

[18] That view was already expressed by Mundell (1962).

[19] This is the so-called transfer problem debated by J.M. Keynes and Bertil Ohlin in the 1920s and nicely modeled in Krugman (1992), chapter 1. For a cross-country empirical analysis, see Lane and Milesi-Ferretti (2004).

[20] Ball and Mankiw (2004) present a "manifesto" of sticky prices. Monacelli (2000) uses a dynamic general equilibrium model of a small open economy to explain the puzzle observed by Mussa (1986): when countries move from fixed to flexible exchange rates, their nominal exchange rate *and* the real exchange rate become more variable, while relative inflation rates remain within a narrow band. It appears that floating exchange rates moves widely but there is rigidity in the adjustment of prices (domestic prices in domestic currency are sticky).

both in surplus and deficit countries, should be complemented by changes in real exchange rates. In the case at hand, higher savings in the US and increased consumption in China can only be sustained if complemented by real depreciation of the dollar and real appreciation of the renminbi—unless China agrees to face excess capacity—an unlikely proposition given its potential widespread economic and political consequences.

If the real exchange rate option is indeed the most effective possibility for addressing the US-China imbalances, why is it not being used? Why is the obvious solution to the problem so often perceived as an unreachable asymptotic frontier? Abstracting from macro-political problems that underline international relations between powerful countries, the main reason is that the trade imbalance between US and China reflects the structural problems in both countries: from the American perspective, the key issue is how to sustain an economic and social growth model based on (over) consumption, low household savings and large fiscal deficits.

For China, reforming the financial sector and the natural resources sector, eliminating the large monopolistic enterprises that create distortions in certain sectors of the economy and addressing the widening income disparity are daunting issues.[21] An exchange rate reform in China may indeed offer a number of benefits as it would allow the central bank to bring the growth of money supply and the overheated economy under better control. It would also change relative prices by lowering import costs, rebalance growth from a heavily-dependent exports model towards a consumer-oriented model, and help restructure the economy. But it could also bring some major political economy challenges. Besides the potential political cost of appearing to bow to pressures from Western countries, a sharp appreciation of the renminbi would raise the cost of Chinese exports abroad and generate unemployment in some sectors.[22] China's structural rigidities therefore make it unlikely that the root cause of global imbalances will be addressed in the short term.

Although the traditional narratives discussed above provide good insights for examining global imbalances, they do not fully explain the phenomenon they describe. Moreover, they do not address the deeper philosophical and political meanings of the deliberate economic strategies and policy measures adopted both

[21] Lin (2009) notes that he concentration of income in large and wealthy corporations suppresses consumption and increases saving, investment as well as production capacity, which in turns lead to the emergence of a large trade surplus.

[22] It is estimated that despite a high rate of growth in 2009—in the order of 8 percent—that has led the world out of recession, China's exports will decline by about 20 percent and at least 20 million jobs will be lost in the coastal provinces of the country.

in deficits and surpluses countries. It is therefore necessary to go beyond accounting identities and analyze the true motives of the observed behavioral relationships.

3. A Useful Parable: The Hegelian Dialectics

Economics benefits both from rigorous analytics and mathematical modeling that help clarify the assumptions underlying each decision and from the integration of lessons of other disciplines (Monga, 2009). A good understanding of the issues of global imbalances requires such an integrative approach. This section suggests a simple, game-theoretic framework that explains the current global imbalances as an illustration of the Nash equilibrium. It considers the US-China macroeconomic and macro-political relationships, and analyzes reasons why both countries may be caught in a Hegelian master-slave dialectics. It concludes that regardless of their rivalry, ideological differences, or levels of mutual disdain, China and the US are economically bound together in the foreseeable future. Leaders on both sides understand this quite well and their policy decisions, including on the dollar-renminbi exchange rate issue, reflect their quest for acknowledgement and recognition.

3.1 The Desire of Nations

Hegel's analysis of the dynamics of self-consciousness (Hegel, 1977), in which he discusses the master-slave dialectics, is a useful framework for understanding the persistence of the issues of global imbalances, and more generally, the enigma of the relationship between the US and China. It offers a credible narrative of the encounter between two self-conscious beings going through the process of self-discovery, violent confrontation, and enslavement, only to realize that interdependence and mutual reliance are in fact the optimal choice at their disposal. In game theoretic terms, one could say that it is the story of an evolving Nash equilibrium.[23]

[23] The suggestion here is that the U.S.-China macroeconomic relationship should be studied as a noncooperative game that slowly evolved into a cooperative game. Noncooperative games are not games in which players do not cooperate, but those in which any cooperation must be self-enforcing. The two countries have always been assumed to hold discussions, to coordinate policies when it suited their goals, to transmit threats, and to make trustworthy promises. However, on sensitive economic issues such as the dollar-reminbi exchange rate, there has really been little coalition formation or other modes of collusion among them. For a long time, they were in fact unable to make enforceable contracts outside of those specifically modeled in the game. They increasingly

The story begins with two self-consciousnesses confronting each other. At first, each sees the other as identical and thinks about the other as another self. This puts them in the position to be mirrors of one another, and to reflect not only who they think they are but also what they appear in each other's image. This spiral of perceptions and meanings goes on indefinitely, to the point of anger and paralysis. Then, they realize that a fight to death is the only way to break out from the self-hypnotizing cycle. The confrontation leads to a clear definition of status: the winner becomes the master and the loser is the slave.

But that is not the end of the story. In fact, it is actually the beginning. Having gone through the fight to death to define their respective selves and reclaim their identities, it becomes obvious that a dead adversary would not be of any use for the living. In fact, the winner would be the true loser: without the dead (the other symmetrical self-consciousness), the winner would miss the platform for his own freedom, the source of meaning to his status and therefore very reason for his/her existence. This is because the supreme objective of any self-consciousness is recognition—and acknowledgement of superiority. In conclusion, the winner is better off sparing the life of the loser and enslaving him/her. The relationship thus changes to an oppressive one, with the master dominating the slave who has surrendered and getting all wishes done through coercion. The winner has power but the loser cultivates resentment and hatred.

Still, that conclusion does not resolve the existential problem of the master, who would have liked to gain self-esteem and recognition from a peer, an equal, not from a slave, and certainly through respect and admiration—not through fear. Moreover, as time goes by, the dynamics of the relationship evolves surreptitiously: through learning by doing and experience, the slave gets better and better at his role, while the master gets accustomed to relying on the servant. This creates addiction and laziness, to the point that the master becomes totally dependent on the slave, who has been "transformed into a truly independent consciousness"—to use Hegel's phrase. In fact, having confronted death during the struggle before surrendering, the slave turns into the stronger of the two. His skills as a servant give him prominence and cancel out the power of the master. The master may be under the illusion that he controls the slave; the truth of the matter is that the latter has as much power as the former. Unsatisfied with such discoveries, the master progressively realizes that he is on shaky psychological grounds, and that they each would benefit from cooperation and mutual exchange rather than from domination. We are now in the perfect Nash equilibrium where the set of strategies

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find themselves in a cooperative game—i.e., a game in which both countries can enforce agreements through outside parties.

available to the master and the slave is such that no one has incentive to unilaterally change his actions.

Like all parables, this one should obviously not be interpreted literally. In fact, taking a critical step back from Hegel's framework, we might consider the obvious fact that the US and China have never really fought. Still, the master-slave dialectics is a useful framework of analysis for the US-China imbalances. It shows what how two countries—each thinking about the other in terms of the self—evolve from their primitive forms of self-consciousness to a superior form of interdependence and economic cooperation. First, it helps link economics and history, as it suggests that no conscious agent (in this case a country) is self-conscious a priori; instead, the agent must discover and enunciate their conception of the self through experience and confrontation. While China prides its five thousand years of history (by opposition to the mere couple of centuries of the US), it has always needed an alter ego or a challenger to define and develop its own identity. The specifics of this historical process of self-discovery will always be subject to debate among philosophers and historians: some explaining China's or the US's stance on the world's stage by giving preeminence to internal dynamics within these two countries; others would argue that all dominant countries need an external sparring partner to define who they are (or who they would like to be perceived). In this analysis of the US-China imbalances, I would take the view that while these two views are not mutually exclusive, the development of self-awareness eventually requires the confrontation of two broadly separate entities—in this case, two important countries.

Just like human beings, countries possess the desire to assert themselves and the urge to transform the world in a way that suits their defined interests. This leads them to adopt actions that require recognition of their power and importance, and ultimately reveal self-consciousness. If Hegel were a macroeconomist, he probably would have described the evolution of the US-China relationship in the following sequence: first, the two countries ignore each other; second, each sees the other as a rival consciousness. After the industrial revolution and the coming to age of the US as the dominant world power, China, self-proclaimed and formerly known as the Celestial Empire (*Tianchao*天朝), the Land of Deities (*Shenzhou*神州), or the Middle Kingdom (*Zhongguo* 中国),[24] finds itself surreptitiously pushed towards the periphery of history. To use Sartre's metaphor (2003) describing the Hegelian process, the world ceased to be centered on China; it moved away to a new, different center.

[24] I rely here on the mandarin language expertise of my colleague Xubei Luo.

America quickly became the word-economy,[25] and remained so throughout most of the twentieth century with its power culminating during the collapse of communism and the fall of the Berlin Wall. Echoing Francis Fukuyama's theme of the end of History, President Bill Clinton exulted that the US has become "the world's mightiest industrial power; saved the world from tyranny in two world wars and a long cold war; and time and again, reached out across the globe to millions who, like us, longed for the blessings of liberty. Along the way, Americans produced a great middle class and security in old age; built unrivaled centers of learning and opened public schools to all; split the atom and explored the heavens; invented the computer and the microchip; and deepened the wellspring of justice by making a revolution in civil rights for African Americans and all minorities, and extending the circle of citizenship, opportunity and dignity to women.... America stands alone as the world's indispensable nation. Once again, our economy is the strongest on earth." (1997) "We are the greatest country in the world, said US Secretary of State Madeleine Albright, and what we are doing is serving the role of the indispensable nation to see what we can do to make the world safer for our children and grandchildren and for those people around the world who follow the rules." (1998).

At the dawn of the twenty-first century, the balance of power has been adjusted and the two countries have reached the Hegelian stage of mutual dependence. The ideological hatred, deep suspicions and geopolitical battles of the Cold War have, have left place to recognition of the fact that while the US remains the dominant global superpower with large economic, commercial, and technological resources, the world is no longer unipolar. In the mid-twentieth century, China and the United States had virtually no trade relations and no direct diplomatic contacts. Yet, as Mann (2000) points out, by the 1990s, economic ties between the two countries had become such a driving force that the Chinese knew that all American threats—most importantly the threat of revoking Most Favored Nation trade status—were empty. Indeed, by the end of the century, the two nations were major trading partners

[25] French historian Braudel used the term "world-economy" (*économie-monde*) in his work on The Mediterranean to define the appropriate unit of economic and social analysis. Borrowing it from German geographer Fritz Rörig, who first used it in the 1920s (*Weltwirtschaft*), he noted that a clear distinction should be made with "the economy of the world" (*économie mondiale*). "World-economy" means "an economy that is the world". See Braudel (1984). The distinction is more than rhetorical. At the conceptual level, a "world-economy" implies that the world in not a reified given entity that is there, and within which an economy is constructed; rather, the economic relations are actually defining the boundaries of the social world. Also, "world-economy" needs not to involve the entire globe but any given geographic space where several countries interact intensively. Wallerstein explains that he "could translate Braudel's term [*into English*] by inserting a hyphen (thus 'world-economy' instead of 'world economy'), the hyphen turning the adjective into an adjectival noun and indicating the indissolubility of the two words, which represent thereby a single concept." (2004 : 89).

regularly swapping visits between their top military leaders and heads of state. The relationship between the world's most populous nation and the world's most powerful nation is now deemed vital to world peace (Vogel, 1997).

In the end, it does not matter who is the slave and who is the master. Their destinies are intertwined and they reluctantly acknowledge it.

3.2 The Analytics of Interdependence and Recognition

The end-results of the Hegelian dialectics is increasing interdependence between the two countries, and the strong incentives on each side to cooperate or collude even as they compete, rather than contemplating another fight to death. Using with the well-known Keynesian foreign trade multiplier, Cooper (1974) offered a useful mathematical exposition of the dynamics of mutual reliance. I will use a more explicit version of his model to provide the formal underpinnings for the discussion of the US-China external imbalances. Consider a two-country world where the macroeconomic linkages in each of them can be expressed as in equation (1),

(1b) $$Y = C + X - M + Z$$

(11a and 11b) $$C = C(Y) \text{ and } C^* = C^*(Y^*)$$

(12a and 12b) $$M = M(Y) \text{ and } M^* = M^*(Y^*)$$

(13a and 13b) $$X = X(Y^*) = M^* \text{ and } X^* = X^*(Y) = M$$

where Y is still US national income, C is consumption, is X exports of goods and services, and Z all other autonomous expenditure—all these variables in constant prices. The same relationships apply from the perspective of China, with an asterisk. Let's define the marginal propensities to import in the two countries as measures of interdependence. For the U.S., we have

(14a and 14b) $$m = \partial M/\partial Y \text{ and } m^* = \partial M^*/\partial Y^*$$

which is positive and less than unity. Using the marginal propensities to save as the unity minus the marginal propensity to consume

(15a and 15b) $$s = 1 - \partial C/\partial Y \text{ and } s^* = 1 - \partial C^*/\partial Y^*$$

By combining all these terms for both countries and differentiating totally, we obtain the following system of simultaneous equations:

$$\begin{bmatrix} s+m & -m^* \\ -m & s^*+m^* \end{bmatrix} \begin{bmatrix} \frac{dY}{dY^*} \end{bmatrix} = \begin{bmatrix} \frac{dZ}{dZ^*} \end{bmatrix} \tag{16}$$

Solved as

$$\begin{pmatrix} dY \\ dY^* \end{pmatrix} = \frac{1}{\Delta} \begin{bmatrix} s^*+m^* & m^* \\ m & s+m \end{bmatrix} \begin{pmatrix} dZ \\ dZ^* \end{pmatrix} \tag{17}$$

where Δ gives the well-known Keynesian foreign trade multipliers that allows for foreign repercussions, that is

$$\Delta = (s+m)(s^*+m^*) - mm^* = ss^* + sm^* + s^*m \tag{18}$$

Using m and m^* as measures of interdependence between the two countries, we can assess both the impact on world income and the impact on country income of an increased expenditure in the U.S. following Cooper's methodology. It can be shown that a proportionate of x percent in both m and m^* affects interdependence in the two countries in the following ways:

For the U.S.,

$$\frac{\partial}{\partial x}\left(\frac{dY}{dZ}\right) = \frac{1}{\Delta^2}\left(-s^{*2}m\right) < 0 \tag{19}$$

For China,

$$\frac{\partial}{\partial x}\left(\frac{dY^*}{dZ}\right) = \frac{1}{\Delta^2}(mss^*) > 0 \tag{20}$$

Equations (18) and (19) tell a straightforward story: as the degree of interdependence between the U.S. and China rises, the impact of a given increase in expenditure on income in the U.S. declines while the impact on income in China rises. Incidentally, this may explains the intuition of some politicians who opposed the 2008-09 fiscal stimulus package in the U.S., which they characterized as additional spending on larger volumes of Chinese imports.

Given that the marginal propensities to save differ in the two countries ($s \neq s^*$), interdependence highlights compositional effects on the aggregate world saving

rate and hence on the total impact of world income. But even in the special situation where the marginal propensities to save would be strictly equal in the U.S. and China ($s = s^*$),

$$dY + dY^* = (1/s)dZ \tag{21}$$

implying that the change in total (world) income would not be impacted by the values of m and m^*, and any gain in impact of increased expenditure on income in the U.S. as a result of changes in m and m^* would be offset by a proportionate reduction in China's income (and vice versa).[26]

3.3 The Politics of Exchange Rate Policies

The exchange rate policy is a key angle for analyzing the US-China Hegelian dynamics. The exchange rate is the most important relative price in international finance. Because bilateral movements can be misleading indicators of the overall decline in the value of the dollar and the renminbi, it would be preferable to focus the analysis on the evolution of real effective exchange rates. But the meaning of what should constitute the "real" exchange rate in the context of competing deflators, and the process of calculating an "effective" rate raise many conceptual and empirical issues (Chinn, 2006).

The sharp evolution in the official position of the current US government on China's currency offers some evidence of the complexity of the relationship between the two countries. In a written statement to the Senate Finance Committee early in his tenure as Treasury Secretary, Timothy Geithner announced that "President Obama—backed by the conclusions of a broad range of economists—believes that China is manipulating its currency. President Obama has pledged as President to use all the diplomatic avenues open to him to seek changes in China's currency practices. While in the US Senate he co-sponsored tough legislation to overhaul the US process for determining currency manipulation and authorizing new enforcement measures so countries like China cannot continue to get a free pass for undermining fair trade principles." (US Senate, 2009: 81). In the same statement, he also promised that his Department will make "the fact-based case that market exchange rates are a central ingredient to healthy and sustained growth."

[26] Cooper (1974) offers an elegant generalization of these results to a three-country dynamics, by adding some additional complexities to the basic structure of the system of simultaneous equations in (16).

That call for Beijing to restrain the number of renmibi in circulation and increase its value vis-à-vis the dollar was perceived by investors around the world as a willingness to sustain the depreciation of the dollar in order to help U.S. exporters. Such a direct approach to the exchange rate issue seemed to mark a clear departure from the policy stance under President George W. Bush to never formally to brand China as a currency manipulator. It seemed at odd with the perspectives of very high fiscal deficits in the US, which implies additional dollar debt.

Chinese authorities quickly responded to the new American position. At the 2009 meeting of China's National People's Congress in Beijing, Prime Minister Wen Jiabao declared: "We have lent a massive amount of capital to the United States, and of course we are concerned about the security of our assets. To speak truthfully, I do indeed have some worries. So I call on the United States to maintain its creditworthiness, abide by its commitments and ensure the security of China's assets."[27] Chinese government officials also reminded their counterparts in the US that there is really no such thing as "market exchange rates," given that the supply of all modern currencies is set by monopolies known as central banks. Like all debtors, the US must continue to attract Chinese buyers for billions of dollars in new Treasury bonds to cover its increasing borrowing needs.

The seemingly hard-line positions taken by both sides has softened quite rapidly—as it always does on such matters.[28] Only a few weeks after the strong stance taken by the US, the Group of 7 released a joint statement that read: "We welcome and appreciate the prompt macro-economic response from others throughout the world. In particular, we welcome China's fiscal measures and continued commitment to move to a more flexible exchange rate, which should lead to continued appreciation of the renminbi in effective terms and help promote more balanced growth in China and in the world economy." This diplomatic statement was made more than a year after the Chinese monetary authorities actually stopped the appreciation of their currency.[29]

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[27] Quoted on CNN Money.com, June 2, 2009.

[28] News reports confirm that. According to http://money.cnn.com, when US Treasury Secretary Geithner met on June 2, 2009 with Chinese President Hu Jintao and Prime Minister Wen Jiabao, "the mood was more conciliatory." Geithner indicated that he was not asked by his counterparts whether the US would inflate its way out of its fiscal deficits and weakening the dollar in the process. He basically brushed away the presumption that the US needs to reassure China of its creditworthiness.

[29] The G-7 statement was released on February 14, 2009. By that time, the 15-20 percent appreciation of the renminbi vis-à-vis the dollar had been halted for almost 15 months.

While there has been a gradual weakening of the dollar vis-à-vis other major currencies since 2002,[30] the true extent and economic significance of its declining value should be explored specifically on the dollar-renminbi exchange rate, which is actually what counts the most for the US current account deficit. Yet, it appears that in recent months the dollar has depreciated vis-à-vis the euro or the yen, while being stable against the Chinese currency (see Figure 2). The fact that the renminbi has in turn depreciated against all the major currencies despite large trade surpluses and capital inflows, increased productivity and renewed accumulation of foreign reserves[31] reveals an open secret: it has actually been informally pegged to the dollar. This is confirmed by the observation that for most of 2009, the only seven currencies that have been significantly weaker than the renminbi are the Icelandic krona, the Vietnamese dong, the Nigerian naira, the Argentine peso, the Iranian rial, the Costa Rican colon and the Pakistani rupee—all currencies from countries whose economies cannot be compared to the extremely dynamic Chinese economy. As Norris (2009) observes, "the results this year has made it clear that there is no basket, unless perhaps it is made up of the naira, the dong and the rial." (Figure 2).

Chinese monetary authorities have obviously objected to the accusation of manipulating the renminbi: "According to the Articles of Agreement of the IMF, 'member countries shall have the right to choose exchange rate regime, either free floating, managed floating or fixed exchange rate, at their own discretion'. In this sense, there exists no such an exchange rate regime that can be labeled as 'manipulating exchange rate'. China's gradual shift from a relatively fixed arrangement to an exchange rate regime with greater flexibility in line with the needs of economic reform and opening up has won extensive support from the world community." (Zhou, 2006). In July 2005, the People's Bank of China launched the reform of reminbi exchange regime to improve the managed floating

[30] The reasons for the depreciation of the dollar can be traced back to the bursting of the US tech-stock bubble in 2000-01, which had a substantial wealth effect on American households (Lin, 2008). To minimize the duration and depth of the ensuing recession, the Federal Reserve aggressively eased monetary policy. It lowered either the Fed funds rate or the discount rate 27 times between January 2001 and June 2003, with the funds rate falling from 6.5 percent to 1.0 percent over that period. This expansionary monetary policy averted a deeper recession. But its effects were compounded by the fact that US demand was stimulated by the substantial swing in the US fiscal position in the aftermath of the 2001 terrorist attacks, from a small surplus in 2001 to a sizeable deficit in 2003, which resulted from sharply increasing spending on defense and homeland security while cutting federal taxes. Combined with a low interest rate and low saving rate, the fiscal deficit contributed to large US current account deficits and higher demand for exports from developing countries such as China.

[31] As of October 15, 2009, China held $2.1 trillion worth of foreign reserves, equivalent to 49 percent of its 2008 GDP or over 2 years of imports! In only the first half of 2009, China's reserves increased by $186 billion.

system, with the goal of allowing market forces to gradually play a greater role in the supply and demand of foreign exchange. While this is not the "big bang" approach requested publicly by American officials, it has permitted the relaxation of controls on foreign exchange under capital account by firms and by individuals under current account. Yet, as apparent in Figure 2, the policy of letting the renminbi appreciate against the dollar seems to have been reversed in the middle of 2008. As explained by Zhou, "China as a large developing economy with heavy employment pressures and a still fragile financial system, could only adopt a gradualist approach to adjust its economy in a controllable manner." (2006).

However, the policy option pursued by China and often denounced in the US as second best or even third best[32] has not led to any strong retaliatory policy actions. To the contrary, recent official reports by the US government praise China for its efforts "towards greater capital account liberalization".[33] This is actually the tacit recognition that the informal dollar-renminbi peg may be in the mutual interest of both countries, at least in the short term: it forces China to receive large amounts of dollars that are invested in American securities—especially Treasury bills. While that process may have contributed marginally to the financing of the housing bubble of 2002-2007 (the FED's lax monetary policy being the primary factor), it has also kept interest rates low in the US—which has been good for growth. The global crisis has not fundamentally changed that equation: China needs a competitive exchange rate to sustain growth and accumulate much needed reserves and the US need a reliable buyer of T-bills issued to finance its stimulus package.

The morals of the story, which is also the reason for the changes in tone and discourse, can be explained by fears on both sides, and the realization, just like characters in Hegel's myth, that each country would be made worse off by an exchange rate war with the other. On the American side, the fear is that Beijing could theoretically abandon its key role in the financing the US budget deficit by curbing its huge purchases of US Treasury bonds. It is through these purchases that Beijing acts to hold down the renminbi, while boosting the dollar. On China's side, there are fears that too strong pressures on the debtor might be counter-productive for the creditor. All sides understand that what is really important for China is to

[32] Krguman for instance has denounced what he calls "China's outrageous currency policy": "with the world economy still in a precarious state, beggar-thy-neighbor policies by major players can't be tolerated. Something must be done about China's currency." (2009)

[33] The US Treasury notes in a recent report that the PBC has implemented two pilot programs that allow corporations to settle their foreign trade in renminbi. It has also signed six bilateral currency agreements with other central banks totaling $95 billion. Since May 2009, several Hong Kong-funded banks have won approval to issue renminbi –denominated bonds in Hong Kong. Finally, the PBC is considering allowing domestic companies to lend funds to their foreign subsidiaries without obtaining prior approval from Chinese authorities. (2009: 14).

have an independent monetary policy aiming at stable prices and stable growth. As Prasad puts it, "flexibility of the currency is an essential prerequisite for this rather than an objective itself." (2009: 227)

Formally, the current situation is actually a Nash equilibrium.[34] If we consider the US-China as a strategic game, one can say that the large current account deficit in the US, compensated by a large surplus in China, the US-China exchange rate puzzle can then be seen as a finite, two-country game in strategic form with the entries p_{ij} representing the payoffs to one of the two countries, the US. The payoffs to China are $-p_{ij}$. The indexes i and j range over US and China strategies, respectively. A strategy pair denoted (i^*, j^*) and consisting of letting the dollar depreciate in order to help exports and improve the trade deficit while China pegs the renminbi to the dollar j^* has the strategic equilibrium property because the US's choice of i^* is its best response to China's choice of j^*, and vice versa. Formally, from the perspective of the US, the best maximization strategy is:

$$p_{i^* j^*} = \max_{i} \; p_{i j^*}$$

China's best maximization strategy

$$-p_{i^* j^*} = \max_{j} \; -p_{i^* j}$$

can also be written as a minimization strategy

$$p_{i^* j^*} = \min_{j} \; p_{i j^*}$$

to express the existence of a saddle point in the hypothetical payoff matrix.

An illustration of the Nash equilibrium in which the two countries find themselves is the proposal made by the governor of China's central bank, to create an international reserve currency with a stable value, rule-based issuance and manageable supply, a sort of "super-sovereign reserve currency" that would replace the dollar over the long run. His starting point was the observation that in the current system, issuing countries of reserve currencies are constantly confronted with the dilemma between achieving their domestic monetary policy goals and

[34] I assume for the sake of argument that it is a zero-sum game. One can obviously question whether this dynamics can be modeled as a two player game; the economy is not just the result of economic policy, there are private actors too. And even the governments are not monolithic. One could easily imagine a U.S. Congress turning against the administration's conciliatory policies towards Beiking, or China's head of the State Administration of Foreign Exchange (SAFE) carrying out his mandate to get the best investment returns by diversifying out of dollars. So far, it has not happened.

meeting other countries' demand for reserve currencies. "On the one hand, the monetary authorities cannot simply focus on domestic goals without carrying out their international responsibilities; on the other hand, they cannot pursue different domestic and international objectives at the same time. They may either fail to adequately meet the demand of a growing global economy for liquidity as they try to ease inflation pressures at home, or create excess liquidity in the global markets by overly stimulating domestic demand." (Zhou, 2009) He also suggested enhancing sharply the global role of special drawing rights (SDRs), the international asset created by the IMF in 1969 and recently given a boost by the decision of the G-20 to expand its issuance by $250 billion.[35]

While several other emerging countries, including Brazil and Russia have expressed support for a new reserve currency, the US and some of its allies have been quick to reject them, reaffirming their confidence in the irreplaceable global role of the dollar. The refusal to even entertain China's proposal was mostly motivated by the fear that a prolonged debate could weaken international confidence in the dollar, driving down its value and prompting a sharp rise in the Euro and other currencies. Moreover, instability in exchange rate markets and the likely rise in global interest rates would have worsened the global recession. Clearly, Zhou's proposal was also partly motivated by the fact that China holds large amounts in dollar reserves and therefore runs the risks of suffering major financial losses if there is a lot of confidence in the American currency because of the large and sustained US budget deficits would translated into major losses for China. Yet, if given credibility by financial markets, the very idea that the dollar could be loose its status as the premier world reserve currency could be costly to China.[36]

3.4 Hegel's Dialectics and Issues of Global Imbalances

Econometric analyses of the issues of global imbalances have yielded important insights on the various determinants of current account surpluses and deficits. But

[35] The SDR was created to support the Bretton Woods fixed exchange rate system. But only a few years after its launch, the Bretton Woods system collapsed and the world's major currencies shifted to a floating exchange rate regime. In addition, the growth in international capital markets facilitated borrowing by creditworthy governments. Both of these developments lessened the need for SDRs. The SDR is neither a currency, nor a claim on the IMF, but simply a potential claim on the freely usable currencies of IMF members. Its users can obtain these currencies in exchange for their SDRs in two ways: first, through the arrangement of voluntary exchanges between members; and second, by the IMF designating members with strong external positions to purchase SDRs from members with weak external positions.

[36] Some American economists would welcome that perspective. Bergsten (2009a) writes that "China has accumulated its dollar hoard of more than $1,000 billion by keeping its currency substantially undervalued, through massive intervention in the foreign exchange markets, and thus deserves no sympathy if it takes losses on those dollars."

they have not provided convincing interpretations of the broader US-China macroeconomic dynamics. The Hegelian master-slave framework helps shed light on the motivations and constraints surrounding these imbalances. It is important to remember that the point of the master-slave relationship is the ultimate interdependence and confluence of interests, the blurring of the lines between the participants, and the constant instability of status among parties—eventually, none of the parties is truly "master" or "slave". Let's examine the perspectives from China and the US, with the former assumed to be the master (creditor), and the latter considered the slave (debtor):

3.4.1 A Powerless Creditor

Chinese Premier Wen Jiabao has been quite straightforward in framing the issues facing his country and providing therefore a rationale for its macroeconomic and macro-political interactions with the US and the world: "A large population and underdevelopment are the two facts China has to face. Since China has 1.3 billion people, any small individual problem multiplied by 1.3 billion becomes a big problem, and any considerable amount of financial and material resources divided by 1.3 billion becomes a very low per capita level. This is a reality that the Chinese leaders have to keep firmly in mind at all times."[37] The population numbers have obviously changed quite a bit since then but the challenges remain the same. In a world where the US is still the most dominant country and certainly the largest economy, it is in China's interest to exploit all the opportunities of globalization to solve its problems. The reality of today is that any country of its size would have to rely on the US economy for trade, investment and growth opportunities.

The recent evolution of China's current balances confirm that change in the country's status: from a relatively modest surplus of $7.2 billion in 1996, it grew to $45.9 in 2003 and 673 in 2008. That is, a spectacular increase in less than a decade. Whether this spectacular change in China's current account balance is due to domestic factors and constraints or more global ambitions, they reflect a complex dialectics. Notwithstanding the financial, economic and political benefits attached to the status of creditor of the largest industrialized economy in the World, the Chinese authorities understand that their country's interests are dependent on a fruitful economic cooperation with the US. Ensuring the best possible relations with the rival (whom certain hardliners even consider to be the "enemy") is therefore crucial to survival and prosperity. That is where the Hegelian master-slave dynamics

[37] Speech at Harvard University, December 10, 2003.

gets into the picture: both sides realize that any sharp correction of the US-China imbalances would be a source of major risks.[38]

One important issue for China is demographics and its contingent liabilities implications. Its increasingly aging population has reinforced the need for savings. Population aging is a typically a phenomenon generally observed in developed countries, but China is already facing that challenge. This is the result of family planning policies introduced in the early 1970s with a view to curb population growth, and as part of the one-child policy implemented in the early 1980s. These policies, together with a decline in infant mortality rate and a rise in life expectancy, have allowed the country to make the transition from high birth rates, high death rates and high population growth to low birth rates, low death rates and low population growth in a relatively short time. The decline in child population before the graying of society increased the working-age proportion of the population and allowed for a decline in the percentage of dependents, which yielded a "demographic dividend" and contributed to economic growth.

But things have changed substantially over the past decade: according to United Nations estimates, China's population aged 60 or above will rise to 17.1 percent in 2020 and to 24.0 percent in 2030. Taking into consideration the fact that the expected deceleration in the decline in the child population, the percentage of the working-age population could fall in the coming years, and the dependency ratio[39] will begin to rise. A decline in the working-age population may lead to a decrease in the labor force, and the rise in the dependency ratio is highly likely to lead to a fall in savings rates.[40] These trends pose serious challenges to the country's long-term growth prospects, and push the Chinese authorities into the Hegel dialectics: it has become crucial to ensure that they shift their objectives from being a net user to becoming a net supplier of funds to the safest international capital market—which is still seen to be the US, their main debtor country.

Another important reason for the change in China's current account position is the belief that despite the close economic and financial relationships with the US, there is no sense of shared purpose between the two countries—and there may never be one. For a substantial fraction of the populace in both countries, there will always be some deep suspicion, and the need to place a pejorative status—master

[38] In an increasingly globalized world, such risks would affect other countries as well—especially those linked through trade and finance to the US; they will suffer the consequences of a reduction in the US external gap.

[39] The dependency ratio is the ratio of number of dependents (population aged 0-14 and population aged 65 and over) to the total population aged 15-64.

[40] It can be argued that the recent upward pressure on wages in coastal regions due to a decline in the supply of migrant workers (especially young workers) is a sign of this.

versus slave—on people on the other side.[41] In addition, even though China was not affect by the emerging market crises of the 1990s, the memories of the turmoil are still quite vivid with policymakers there, who have taken extra-precautions to prevent the kind of catastrophic events they observed in countries such as Thailand, Korea, Mexico, Russia or Brazil. Despite not having encouraged risky capital inflows in their own country, they worry about the loss of foreign lender confidence, the possibility of an overvalued exchange rate, and even the very idea of excessive short-term debt denominated in foreign currencies of the kind that led to painful crises elsewhere.

Because of these memories and fears, and the lack of trust in their relationship with the US (an "unreliable partner" at best and an "arrogant and recalcitrant slave"),[42] their macroeconomic strategies embody a substantial dose of hysteresis. With that frame of mind, the Chinese authorities have resorted to the Confucianism principle of "He who will not economize will have to agonize." They have built up large amounts of foreign exchange reserves, a strategy that has involved a shift towards surplus in China's current account, reductions in gross private capital outflows, increases in gross capital inflows, or some combination of these measures. This war chest was not built for war but rather, to serve as a buffer against potential capital outflows.[43] But in the context of exchange rate management, they also served to prevent the appreciation of the currency and the promotion of exports.

Global political economy factors should therefore be given prime consideration in the discussion of China's current account surplus, as they provide another justification for the country's Hegelian posture on issues of global imbalances. Globalization has provided a major impetus to China's ambition of greatness, which obviously pre-dates the modern era.[44] In a macroeconomic strategy that could be

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[41] One can find evidence of mutual suspicion in the results of various surveys. In October-November 2009, the Pew Research Center surveyed 1,000 foreign policy experts, including US government officials and university professors. 642 of them responded. Asked which countries or territories will be more important future US allies, 58 percent chose China, which ranked third in 2005. The research center also surveyed 2,000 civilians aged 18 or older about favorability of countries. 44 percent (highest number) China as the world's leading economic power (and the US second with 27 percent), which they only placed eighth in terms of favorability.

[42] To understand the level of distrust of the US and the West in general among the Chinese political elite, see the recently published memoir of Zhao Ziyang, the purged Communist Party chief and former prime minister of China, who was removed from power in 1989 after he opposed the use of force against democracy protesters in Tiananmen Square.

[43] This point is convincingly made by Bernanke (2005).

[44] Once called upon by journalists to respond to criticism from the American President about his country's poor track record on human rights, China's President Jiang Zemin (1993-2003) reminded his interlocutor that it would be bizarre for him, the Head of a state that had more than

compared to Hegel's notion of defining and asserting self-consciousness, the Chinese government has gone so far as to mobilize domestic saving and using the proceeds to buy American securities, that is, issuing domestic debt to Chinese economic agents or running fiscal surpluses in order to increase foreign reserves. By diverting domestic saving from their country's needs into the US capital market, they have essentially confirmed their desire to play an even more important role on the world stage. This is reflected by China's repeated calls for greater voice and participation on the boards of major multilateral organizations like the World Bank or the International Monetary Fund.

Some economists have expressed concern that China, which has become the largest buyer of American assets and its most important creditor may decide to change their foreign investment strategy, and stop funding the large US current account deficit. While China's foreign reserves managers could, in principle, abruptly shift their interest and focus to other markets and currencies such as the Euro or the Yen, the reality is they have very few incentives to do as, for one important reason: any major economic catastrophe in the US (major recession or high inflation in the US, large depreciation of dollar-denominated assets, etc.) would also hurt their country profoundly. It would disrupt their most important market, jeopardize their country's growth prospects, and drastically impair their ability for addressing some of the pressing daunting issues on their development agenda.

China's development model makes it necessary to retain some form of capital controls in the foreseeable future. Its growth strategy relies heavily on rapid capital formation or fixed asset formation, which accounted for an estimated 45 percent of GDP in 2008. This level of investment is almost unprecedented for large economies. For instance, the fixed asset investment ratio in the U.S. never rose much higher than 20 percent, even during the peak period of its industrialization between 1889-1913, and the post World War II reconstruction phase of 1946-55. In Japan, the highest the ratio ever reached was about 32 percent in the 1960s and 1970s. In Germany, it only reached about 21 percent during the heavy investment periods from 1891-1913 and again from 1952-58 (Shan, 2005). Such a high level can only be maintained because in addition to the inflow of foreign direct investment, the controls of the country's capital account do not allow economic agents to explore higher returns abroad and therefore leave few options to but to save or invest at home. Lifting capital controls and allowing the renminbi to float freely could very well result in an outflow of private savings, which would cause a depreciation of the currency—not the outcome most policymakers in the Western

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5,000 years of history, to respond to injunctions by the President of a small, junior country (the US) of only some 2000 years of experience...

world hope for. Moreover, because Chinese growth is currently sustained by high levels of investment, the complete relaxation of capital controls could also lead to scarcity of capital and disruption of trade in the short run, and a deceleration of economic activity. Since a modest revaluation of the renminbi would only encourage speculative inflow of capital, exacerbating the pressure on China's money supply, the optimal adjustment strategy for the medium-term may be for China: (a) to agree to the appreciation of the exchange rate; and (b), to let the currency float within a managed band against a basket of currencies under the current regime of continued convertibility on the current account but capital account controls.

Given its current development strategy, China also has few incentives to curb its financial inflows. While there has been a surge in non-FDI capital inflows to China in the past decade (Prasad and Wei, 2005), much of the country's reserve accumulation has been in FDI, which is a positive outcome for the country. The usual rationale for not holding very high levels of reserves is two-fold: first, they are typically held in treasury bonds denominated in hard currencies whose rate of return is often assumed to be lower than rates that could be earned investment projects within developing countries where there is presumably a shortage of capital. Second, going back to equation (9) in the previous section, it appears that capital inflows that are part of the reserves accumulation process can increase liquidity in the banking system and create moral hazard issues in a poorly supervised environment.[45] But that rationale does not fit well China's particular situation: with its very high investment rates supported by high domestic savings, capital scarcity is not an issue. Also, because domestic interest rates are maintained at low levels and the country's reserves are held mostly in medium- and long-term treasury bills, there might be net benefits to sterilization and therefore no reason not to hold high levels of reserves.

A further reason why the Nash equilibrium in the current global imbalances situation is unlikely to change substantially in the immediate future is the lack of incentive for all the major players involved to make abrupt adjustments in the international role of the dollar. Since being enthroned as the leading global currency after World War II, it has attracted and maintained confidence of policymakers and private agents from all over the world. Despite the breaking down of the system of official exchange rate parities in 1971, the launch of the Euro in 1999, and the regular predictions of economic woes in the US, it is still the preferred vehicle for international commercial transactions, the currency of choice in the interbank spot and forward exchange markets, of international capital flows,

[45] While sterilization of capital inflows could be used to avoid excess liquidity in the domestic financial sector, the fiscal cost of effective instruments is often substantial: the rate of return on sterilization instruments is usually much higher than the yield on reserve holdings.

of invoice for primary commodity trade, and for a large number of industrial goods and services. As a medium of exchange among more than 150 other national currencies, the dollar enjoys a degree of dominance that is comparable to a natural monopoly (McKinnon, 1996). Conspiracy theorists may complaint about that; the truth is that this happened by accident, just like the generalization of computer keyboards starting with the word "qwerty". The dollar offers large economies of scale when used as the main instrument for international exchange. In theory, this could change any time. In reality, it would take the unlikely events such as a massive failure in economic and political governance or the eruption of hyperinflation in the US to dethrone the dollar.

The advantages to the American economy and financial system of the international status of the dollar are enormous: the US constantly benefits from an almost unlimited, revolving line of credit, denominated in its own currency, with other economies of the world. This soft budget constraint provides an invaluable guarantee that its economic agents (firms, households, government) will not be subject to currency risks—and immunized from the potential costs of dollar depreciation. Whereas other debtors must constantly think about the potential costs of foreign exchange risk and the challenges of currency mismatches for their portfolio, US agents can enjoy the privileges of borrowing on international markets in their own currency.[46] From a purely ethical point of view, one can wonder whether it is fair that the world's richest economy can cheaply and continuously draw on the limited global pool of savings (mostly from developing countries) to finance its over-consumption. However, if ethics is defined not as rigid and normative system of moral principles but rather as a framework by which decisions are to be judged within their context,[47] then there is little basis for judging the pertinence of decisions that are presumably made with the goal of gaining mutual benefits, in full knowledge of their economic and financial implications by all the parties involved.

Once again, one can see the Hegelian dynamics at play: the interests of masters and slaves are intertwined. On the one hand, the US has no interest in taking any action that would result in the loss of the economic and financial advantages yielded by the international status of the dollar. On the other hand, China and other debtors have good, structural reasons for accumulating positions in US equities: portfolio investors from around the globe see no other country in the world with a

[46] The assets of American financial institutions, which are very often claims on their domestic economy, are denominated in dollars; the same is often true for their liabilities (deposits), mostly owned by foreigners. The intrinsic dose of moral hazard built into such a system certainly encouraged over-leveraging by American financial institutions and contributed to the 2007 global financial crisis. But on balance, the long-term payoff [to be completed]

[47] Appiah (2009) offers an interesting account of the contribution of psychology to ethics.

better business environment (especially when it comes to property rights for foreigners) or more profitable opportunities; likewise, fixed income investors consider that no other bond markets in the world can offer the kind of depth and liquidity that they have in the US bond market (Burger and Warnock, 2006). Thus, in order to preserve its wealth, almost all players involved in the global imbalances game would rather preserve the status quo than attempt to unilaterally change the rules.

3.4.2 A Powerful Debtor

Let's now look at the Hegelian dialectics between China and the US from the perspective of the latter. A joke by comedian Jon Stewart on the TV program The Daily Show can help make the point. Poking fun at US President Barack Obama for his decision to delay a meeting with the Tibetan leader Dalai Lama in favor of strengthening relations with China, Stewart said sarcastically: "We don't want to upset China! Gosh!... Imagine what they would put in our toys and toothpaste if we upset them!..." Like most TV jokes on international economics, this one was quite tasteless. Still, it made a couple of important points: first, it highlighted the reliance by US on China as the source for a large fraction of consumer goods for its large domestic market. Second and perhaps more important, it conveyed the implicit acceptance (which almost rises to the level of addiction) by American households and firms of these cheap imports from a country often viewed with suspicion by politicians and located thousands miles away.

The popular success and market dominance of large distribution, cost-cutting chains confirms that economic agents in the US are getting accustomed to the various facets of globalization and the rise of mega-corporations. China's economic effect is double-edged: because of its cheap production costs, it can produce mass-market consumer goods for large distribution companies such as Wal-Mart. As a consequence, American consumers benefit from lower prices, even if they do not shop at Wal-Mart. But such dependency carries major economic costs (limited competition[48]), which are probably factored in the attitude of American consumers, and their acceptance of cheap foreign products. China currently has the edge in that competition: many of its firms can aggressively reduce prices, which allows them to gain market shares abroad. In fact, the country has won a larger piece of a shrinking world trade in 2008-09 because consumers demanded lower-priced goods that

[48] Fishman (2006) makes the point that Wall-Mart has become too big to be subject to market forces or traditional rules. His suggests that the company has changed US consumer habits by accustoming the American consumer to expect and to demand low prices, and to immediately suspect that any product that has a higher price tag than its Wal-Mart equivalent must be a rip-off. The so-called Wal-Mart ethos has replaced the expectation of quality with low cost, which used to be the primary criterion for consumers.

Chinese factories could deliver.[49] Besides enjoying a competitive exchange rate, benefiting often from government subsidies (through tax credits) and large low-interest loans from state-run banks, these factories had the ability to quickly cut prices by reducing costs of production (including wages) in areas where migrant workers are employed. Given the country's diversified portfolio of low-priced and necessary goods matched by few competitors around the world, it is now clear that its manufacturing sector could hold up quite well even in a recession. Over time, these basic stylized facts of globalization will change as accumulation of capital takes place in China, higher incomes lead to wages increases and the shortage of low-cost labor in some industries, and the process of industrial upgrading takes place. Quite logically, such a dynamic economy will have to move up the value chain and produce more higher-priced goods (pharmaceuticals, aircrafts, computer ships, etc.), which will require higher wages. As they become richer, Chinese workers will then consume more and buy more of their own goods, which will contribute to the rebalancing of the global economy. In the meantime, just like in the Hegelian metaphor, the American economy currently needs cheap products from China, which in turns needs the large US markets for its exports.

Another important element to consider is the available margin to lower US consumption. Conventional wisdom has it that much of the global imbalances problem would be resolved if consumption in America was substantially reduced in favor of productive investment and higher net exports. To put things in perspective, one should remember that US private consumption represented about $10 trillion in 2008 (about 16 percent of global output), compared to $9 trillion in the European Union and less than $5trillion for Asia. Private consumption in emerging economies such as India, Brazil, Russia or South Africa cannot match the buying power of American consumers. For the very optimistic scenario of a permanently lower level of consumption in the US compensated by a permanently higher level of consumption in developing countries to materialize, there should be a change in the composition of world demand—this is because the composition of any given country's consumption depends on its per capita income.[50] But engineering such a structural change in the composition of world consumption at the global level and adjusting the structure of world production would require large investments—and time.

The sudden rise in the personal saving rate in the U.S. from about 1 percent in 2007 to 5 percent in early 2009 has given credence to such calls. However, it is

[49] In 2009, China displaced Canada as the largest supplier of imports to the U.S..

[50] Giavazzi (2009) rightly points out that such changes in the composition of goods demanded are already taking place: primary commodity producers, especially in Latin America, are benefiting from the demand shifts towards China and India.

doubtful that such rebalancing of domestic demand in America could realistically take place without a sharp decline in economic growth in a country where consumption has consistently represented about 70 percent of GDP, especially in the context of a sluggish world economy. It is true that US consumption has declined slightly in recent months. Anecdotal evidence also suggests that conspicuous consumption in the US may have been affected by the global economic crisis (Dewan, 2009). Pointing out that the Great Depression created a generation of cautious savers, these new trends are generating optimism among researchers. It is even projected that because of the recession, American households could increase their savings to about 4 percent of disposable income (income after taxes), which would translate into a sustained fall in their consumption equivalent to about 3 percent of GDP (Giavazzi, 2009). "Though the recession was always talked about in economic terms, we felt really strongly that, in fact, it was a crisis of culture," said Tracy Johnson, a director for a market research firm, who also views the recession as "a rite-of-passage that will reorder consumer priorities" (quoted in Dewan, 2009). Such statements are overly optimistic: the adjustment in US consumption and saving is probably more a temporary, emergency response than a permanent recalibration of economic behavior, financial habits and general attitude towards intertemporal choices.

True, the substantial increase in household debt in America rose from 77 percent of disposable income in the 1990s to 127 percent before the crisis in 2008 may have been related to the housing bubble and to financial innovation, which allowed private agents to capitalize and consume their perceived gains in wealth from rising real estate prices. It is therefore conceivable that the burst of the bubble and the recession can "correct" such behavior and compel households to save. But the new restraint is not likely to last, for both economic and psychological reasons. First, cutting spending in an economy still in recession or recovering very slowly is not being encouraged by the US government. To the contrary, a substantial fraction of the fiscal stimulus package under implementation aims at strengthening the purchasing power of households and firms—and maintaining high levels of consumption. It is true, however, that the use of fiscal stimulus to compensate for the shortfall in consumer spending has its limitations: even assuming a positive multiplier, boosting public spending and cutting taxes can only be temporary measures, as they create unsustainable deficits. Eventually, private demand will have to rebound for the US economy to get back to a more balanced growth path.

Second, it can be argued without exaggeration that consumerism is in the DNA of the US economy, just like extravagance and opulence are the twin engine of its system. One may recall that after the terrorist attacks of September 11, 2001, President George W. Bush urged his fellow citizens to go shopping. An examination of the motives for spending in the US (why people buy the things they

do, and why they are so willing to trade their most valuable, non-renewable resource -- time -- in exchange for them) reveals that consumerism is deeply ingrained in the American psyche. The quest for social status plays a big role in such decisions (Schor, 1998). This is evidenced by the difference in brand consciousness between socially visible and socially invisible products: people care more about the brand of jacket they wear or coffee they drink than about the brand name on the furnace in the basement or the life insurance policy in their file cabinet—products which are arguably more important.

Moreover, even in the unlikely scenario that American consumers drastically change their cultural and spending habits and suddenly become as thrifty as Japanese consumers, an unresolved question would be whether their government can also reign in its large budget deficit. The US federal budget deficit is projected to reach $ 1.6 trillion in 2009 (11.2 percent of GDP, the highest level since World War II), and to remain well above the $1 trillion mark for most of the coming decade. For the world economy, the potential costs of large projected budget deficits in the U.S. are substantial: global interest rates could rise and emerging market borrowing could be crowded out from global markets.[51] The immediate causes to that level of deficit are well known: (i) the recession has reduced anticipated tax revenue while increasing spending for safety net programs such as unemployment benefits or food stamps. (ii) Expansionary fiscal policy was also deemed necessary to stimulate the economy and avoid a second Great Depression. (iii) The cost of interest incurred on the expansion of federal debt has been on the rise—from 33 percent of GDP in 2000, it is projected to reach 68 percent in 2019. The more structural causes of the U.S. deficit are the trends in the two most important social programs—Medicare and Social Security—which are expected to balloon for several decades, as baby boomers reach retirement age.

As implied in equation (7), large budget deficits are likely to induce a vicious circle that worsens the US trade/current account deficit and foreign indebtedness. Lessons from economic theory and from history suggest that a country saddled with fiscal deficits and ever-increasing debt can run out of viable macroeconomic strategies: the possibility of default on the sovereign debt, or a traumatic collapse in the value of the currency. Yet, in another twist of Hegelian dialectics, American policymakers are not too worried about such catastrophic scenarios. Investors around the world simply do not envisage that the U.S. could be unable to pay some

[51]The empirical literature on this issue is mixed. One can argue that there is a negative correlation between the U.S. debt and the yield spread between sovereign bonds from emerging markets and the U.S. Treasury debt—the former offering an alternative to the latter. But it seems more plausible that an increase in the U.S. Treasury rates due to larger deficit projections is likely to be met by an even larger increase in yields on all risky assets (especially from emerging economies), as investors request higher compensation for the extra risk. See Celasun (2009).

holders of its bonds—though it is almost certain that future inflation will substantially alleviate the burden of repaying some of the debt. Nor do they believe that a sudden crash in the value of the dollar is likely, despite its recent declining trend.

Moreover, looking at the evolution of the debt-to-GDP ratio, which is the conventional way of assessing sustainability,[52] it appears that the projections may not be as alarming as they seem. It is estimated that even an increase of 40 percentage points in America's debt would only cost an additional 1 percent of GDP or 5 percent of government revenue in real interest (U.S. interest rates are still quite low by historical standards and the government has been borrowing long-term money at less than 3.5 percent). Other industrial countries with stable and well-established democratic systems have experienced high debt ratios without suffering financial crises: Belgium and Italy recorded debt-to-GDP ratios well above 110 percent in the 1990s. Japan's ratio has been above 150 percent since the beginning of the decade and is currently around 200 percent; it is also true that it differs from the U.S. in several important ways: personal savings there are much higher and less than 10 percent of the country's debt is held by foreigners, compared to 46 percent of America's debt. Even more important is the fact that Japan seems immunized from a sudden sell-off of government bonds: about 50 percent are held by the public sector, and the other half is held by long-term investors (banks, insurance companies, pension funds, etc.) who are strongly encouraged to keep them because of existing regulations.

Still, if economic theory is to be used as a guide, there is always the possibility of a negative scenario, that is, persistent deficits that eventually drives up interest rates as public and private sectors compete for funds. Higher interest rates would then increase the cost of servicing the debt and raise the theoretical risk of default. And if the Federal Reserve were to print more money to monetize the debt and thereby reduce its burden, the supply of dollars would shoot up, lowering its value even further in a negative spiral. But the Hegelian framework suggests that China would not gain from such a doomsday scenario and would not take any policy action conducive to it. For all the fear of shifts away from the dollar as the reserve

[52] As I indicated elsewhere (Monga, 2004) fiscal sustainability does not simply refers to a government's ability to finance itself. It also requires fiscal and monetary policies to be consistent with the expected growth, inflation and interest rates. Sustainability does not necessarily implies that the government be able to pay off its debt in the long-run. It implies that real debt is increased only at a rate less than the real interest rate paid on it. In other words, the government is accountable for the net real interest rate (real interest rate, r, minus the real growth rate, μ) paid on the debt to GDP ratio, $b0$. This can be financed either with a primary surplus $g - \tau$, or with seigniorage revenue, which is represented by the inflation tax paid on the money demand to GDP ratio, $L(r+\pi)$ which is a decreasing function of nominal interest rate, $(r+\pi)$. This sustainability condition is represented as: $(g - \tau) + (\pi+\mu) \cdot L(r + \pi) = (r - \mu) \cdot b0$.

currency of choice, it simply has not yet occurred. In mid-2009, the dollar still accounted for more than 60 percent of global foreign reserves (see Figure 3).

Even if one assumes that concerned foreign investors start requiring higher interest rates to hold US securities and that this lead to higher interest rates in the U.S. and the appreciation of the dollar. A stronger dollar, in turn, would make American goods and services more expensive abroad and imports cheaper, which only exacerbate the trade/current account deficit. High levels of wealth in US stock markets also tend to reinforce the willingness of American consumers to spend—including on imports, which is the case when the dollar is relatively strong vis-à-vis other currencies. Again, from the perspective of the US-China relationship, one is back to the master-slave dialectics, where it becomes unclear who actually dominates whom.

A third factor to be taken into consideration is the possibility that a substantial or abrupt reevaluation of the Chinese currency results in a large deceleration of growth in China (and a decline in global GDP), which would in turn hurt US exports and growth. In sum, China and the US may appear to hold keys roles in the global imbalances game. But they both actually have very few options at their disposal to fundamentally and abruptly change the dynamics of the situation. Just like the master and the slave in Hegel's dialectics, both parties have legitimate fears that they would end up worse off if the goose that lays the golden eggs.

4. Conclusion

This paper can be concluded with some broad generalizations about recent developments on global imbalances and some conjecture about the future. Traditional narratives of the US-China economic relations—whether based on the analysis of the dynamics of national accounts identities, trade flows or financial flows—have generated controversy and confusion and led to two opposing views of what each of the current situation, and what the two countries should be doing next.

- The pessimistic view is that global imbalances are not only unsustainable but inherently dangerous, as they may have gloomy consequences for the world economy. Some (not all) of those who adhere to that thesis are warning about the accumulation of foreign liabilities by the U.S. and the loss of market confidence, which carry a high probability of an apocalyptic crash of the dollar and skyrocketing interest rates, with negative repercussions for both industrial and developing economies. To avoid the dismal scenario of a disorderly adjustment imposed by financial markets, they call for China to let its currency appreciate, rebalance its growth pattern from exports to

domestic demand by saving less and consuming more. Rejecting these calls, Chinese authorities consider global imbalances to be the result of poor macroeconomic policies in the U.S.. They warn about the potential costs of a sudden appreciation of the renminbi for China and the global economy, and in turn call for lower fiscal deficits and higher interest rates in the U.S.—yet, these policies would also slowdown the global economic recovery and worsen the already concerning U.S. unemployment problem.

- The optimistic view of the global imbalances rejects the assumption that financial markets can abruptly change their assessment of the sustainability of the U.S. This is based on the observation that there is no historical precedent of abrupt and disorderly exchange rate adjustments in industrialized countries where the financial systems are relatively well regulated and inflation have been kept in check. This leads to the view that the U.S. current account deficit and the China surplus are not anomalies but rather, the predictable outcome of a world with globalized financial flows in search of return. As Xafa puts it, "once capital flows are endogenized as functions of risk-adjusted returns and diversification opportunities, global imbalances become an equilibrium outcome of differences in potential growth rates and asset supplies across different countries and regions." (2005 : 17). The conclusion is that global imbalances will be corrected through the normal functioning of markets as global growth becomes more balanced across regions (a slowdown in the U.S. compensated by acceleration in Japan, Latin America, or elsewhere).

I have argued that the U.S.-China imbalances represent a sub-optimal situation because a weak renminbi drains off demand away from other producers around the world to Chinese exporters whose competitiveness is artificially maintained. However, fears about the worsening of the situation to the point that the world economy will suffer devastating consequences are widely exaggerated. The level of interdependence between the U.S. and China make any fundamental disagreement on economic policy—let alone a sustained conflict—highly unlikely. The U.S. currently has little incentive (and few reasons) to seriously implement a strategy to curb its fiscal and current account deficits; private consumption of cheap imports for China is an important part of its growth model, and China is also a creditor of choice to absorb large quantities of bonds issued to finance a fiscal deficit that is both structural (due to large retirement benefits to baby boomers, infrastructure needs and health care liabilities) and politically necessary. For the foreseeable future, China will remain largely dependent on the U.S. for its exports and will need the U.S. treasury bonds to absorb its huge stock of foreign reserves. In this

situation, both countries are in a Nash equilibrium and have little incentive to change their policies abruptly.

Calls for rebalancing China's growth model must take into account the daunting challenges of shifting from exports to consumption, which includes the likelihood of higher unemployment in the short-term, and the major political economy risks associated with wide-ranging structural reforms in the financial system, the education and health sectors. In order to increase private consumption enough to compensate for a decline in the contribution of external demand to growth, the country will have to reorient the production of tradable goods towards domestic markets. This would require an economic and social adjustment of gigantic proportions, as a large number of less skilled workers currently employed in the tradable sector try to move to the nontradable sector where there will be more demand for existing and new services.[53] Because employment is more evenly distributed across industries in coastal areas (where the creation of special economic zones has facilitated access to credit, openness and competition) than inland (where it is dominated by agriculture), any strategy for rebalancing growth should account for its distributional effects.

In fact, a broad view of history suggests that for many years, the two most dominant powers in the world today have been struggling with what philosophers have called "the politics of recognition"[54]. Just like the characters in Hegel's parable, the two countries have reached a stage each perceives its own identity as constituted in part by acknowledgement of its status by the other. The creditor (China) cannot be or think of itself as such unless the creditor recognizes its importance and shows respect—and the same goes for the debtor (the U.S.).

Political leaders in both countries may have come to the same conclusion. Behind the sometimes heated rhetoric by some commentators in both China and the US, the two countries' perceived interests are intertwined in to the point that the rebalancing the global economy can only take place smoothly and gradually. While macroeconomists were debating the danger of global imbalances, President Barack

[53] The manufacturing sector employs less skilled workers that the services sector, with more than 70 percent of its workforce having attained less than a junior school degree, compared to 35-50 percent in services. This differential suggests the possibility of skills mismatches in the shift of labor resources from the tradable to the nontradable sector. See Guo and Ndiaye (2009). The nontradable sector, defined as including the tertiary and construction, accounted for 37 percent of employment in 2007. It has been responsible for most job creation in recent years, thanks to the government's decision to provide reemployment to laid-off workers from the restructuring of state-owned enterprises that occurred in the late 1990s.

[54] Recognition here should be understood as acknowledgment and accommodation. For theoretical developments of the concept, see Taylor (1994), Honneth (1995) and Appiah (2005).

Obama declared during his recent trip to Beijing that relations between the two countries are at "at an all-time high." (Higgins and Kornblut, 2009) He hailed China as an economic partner that has "proved critical in our effort to pull ourselves out of the worst recession in generations" and described its rising prosperity as "an accomplishment unparalleled in human history...The major challenges of the 21st century, from climate change to nuclear proliferation to economic recovery, are challenges that touch both our nations, and challenges that neither of our nations can solve by acting alone." President Hu Jintao responded in kind that "There are growing global challenges, and countries in today's world have become more and more interdependent."

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Figure 1: Current Account Balance, China and U.S., as percent GDP

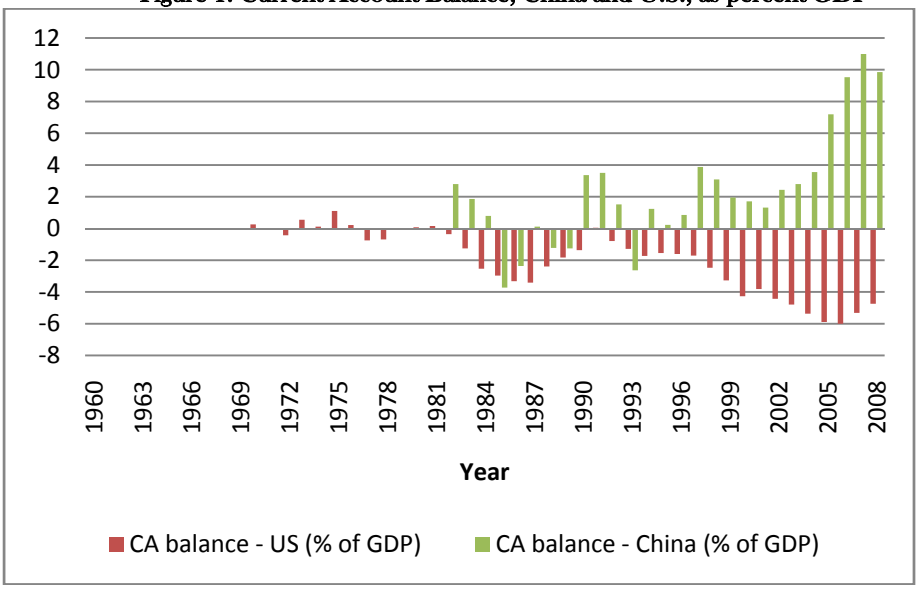

Figure 2: Exchange Rate dynamics, 1999-2008

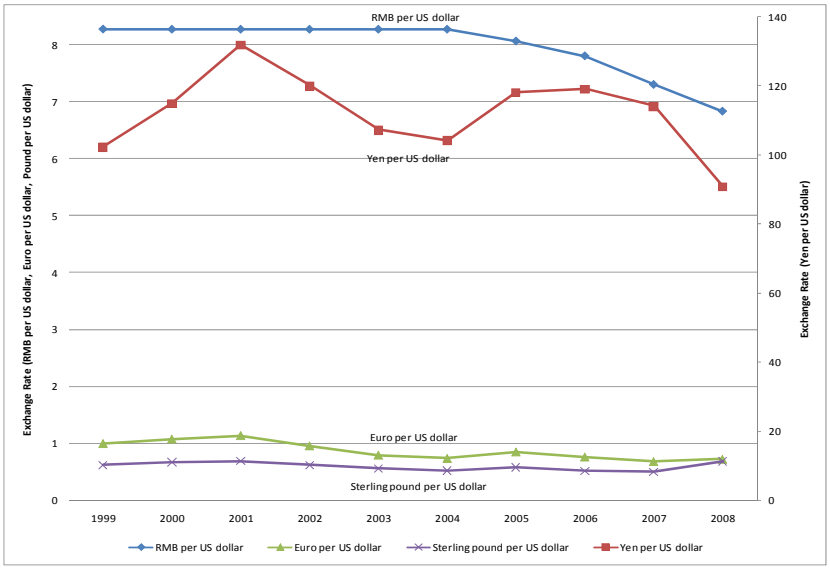

Figure 3: Currency Composition of Foreign Reserves, 1999-2008, as percent of allocated reserves