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## International monetary policy spillovers in an asymmetric world monetary system - The United States and China

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# Working Papers on Global Financial Markets

No. 33

## International monetary policy spillovers in an asymmetric world monetary system: The United States and China

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## International monetary policy spillovers in an asymmetric world monetary system: The United States and China\*

### Abstract:

The paper scrutinizes the spillover effects of expansionary monetary policies of a center economy to the macroeconomic policies of periphery countries, dependent on the exchange rate regime. In particular the impact of the US quantitative easing on the Chinese economy is analysed. The results suggest that the exchange rate regime plays a minor role in insulating the economies at the periphery of the world monetary system from monetary policy shocks in the center. The only exception is capital controls which enable the periphery countries, in particular China, to maintain a certain degree of monetary independence in the short run. In the long run a closer Chinese-European policy coordination is argued to create a counterbalance to the predominance of the US dollar in the currently asymmetric world monetary system. This would provide an incentive to the US to phase out undue monetary expansion.

*Keywords: monetary policy, excess liquidity, spillovers, US, China*

JEL: E31, E42, E52, E61

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## 1 Introduction

Two US quantitative easing programs since 2008 flooded the financial markets with liquidity to a scope that has never been seen before. The US FED implemented conventional and unconventional monetary policy measures to prevent the US economy from slipping into a deep and long-lasting recession. Cheap money, through massive interest rate cuts and asset purchases by the FED since spring 2009 of more than 1.7tn US\$ (Federal Open Market Committee 2009, 2010) protected large financial institutions from default, potentially preventing a chain reaction. The rescue measures came at the cost of ultra low interest rates and financial and goods market distortions both on a national and international level. To reanimate the still sluggish US economy the historically low interest rates are likely to prevail for the next years – with far-reaching consequences, not only for the US. As the US dollar dominates the world monetary system, monetary expansion in the US is flooding the rest of the world with low-cost liquidity thereby causing further distortions at the periphery of the world monetary system.

This paper scrutinizes the monetary spillover effects from the United States on the dollar periphery in general and on China in specific. It is analysed if the exchange rate regime can play a role in insulating the Chinese economy from monetary shocks in the US and if capital controls can enable an independent Chinese monetary policy. Previous research regarding the Chinese exchange rate regime has mainly focused on the question of if the exchange rate is undervalued and if renminbi (RMB) appreciation can reduce the US-Sino trade imbalances. A large part of the literature advocates a flexible exchange rate regime (e.g. Goldstein/Lardy 2009, Prasad 2008, Frankel 2006) as RMB appreciation is assumed to reduce Chinese export competitiveness and diminish trade imbalances. McKinnon and Schnabl (e.g. 2009b, 2012) on the other hand argue that the current account surplus originates in a domestic saving surplus over investment and therefore cannot be balanced by rearranging the exchange rate regime. They provide evidence that the Chinese dollar peg has stabilizing effects for the East Asian intra-regional production chains and the world economy as a whole.

Little research, however, has been done concerning the Chinese ability to perform an independent monetary policy under alternative exchange rate regimes. This paper contributes to the previous literature by analysing if the exchange rate regime can be an effective tool to gain monetary policy independence in the face of expansionary monetary shocks in the center economy. For this purpose, monetary spillovers from the US to China and the possible feedback effects on the US are analysed. Although this research is focused on China the key insights are relevant for emerging economies in general. China is in the focus of attention because of the highly politically relevant discussion regarding its current account surplus, exchange rate policy, capital controls, soaring exports and mounting foreign reserves.

The first step is to analyse the impact of monetary shocks originating in the US on China in consideration of the exchange rate regime. It is shown that widely regardless of the exchange rate regime a country with underdeveloped goods and capital markets cannot be insulated from exogenous monetary expansion in the center economy. The third section takes the increasing importance and integration of China in the world economy into account and scrutinizes feedback effects of Chinese exchange rate stabilization to the US. The question of, if possible, how to prevent unintended monetary policy spillovers from the US to China will be addressed in the fourth section. Finally economic policy conclusions are elaborated in the fifth section.

## **2 Unilateral spillover effects**

Spillovers can be defined as all kinds of “external effects of policies in systemic economies” (IMF 2011a). This paper focuses exclusively on monetary spillovers. Firstly, spillovers of excessive monetary expansion in the center economy of the world monetary system, the United States (US), on periphery economies, in particular on China, are scrutinized. Secondly, monetary spillovers in the form of feedback effects from the periphery to the center i.e. from China to the US are analysed.

## 2.1 Fixed and quasi-fixed exchange rate regimes

It is shown that the monetary expansion in the US, which issue the international reserve currency, leads to monetary expansion in the periphery countries independent from the exchange rate regime (McKinnon 2010, Belke/Gros 2010).

To illustrate the transmission mechanisms of an exogenous monetary shock in the center economy on the periphery under alternative exchange rate regimes a Mundell-Fleming framework is used (Fleming 1962, Mundell 1963). The shock originating in the US, in form of a monetary expansion in response to the 2007/08 financial crisis, and its impacts on China are analysed. The Mundell-Fleming model assumes openness to trade and full capital mobility. China can, at the latest since its WTO entry in 2001, be regarded as an open economy for goods trade. Capital mobility on the other hand is limited as capital controls remain in place to protect China's underdeveloped and shallow financial markets from uncontrolled capital inflows. However, at least partial capital mobility can be assumed to hold as vast amounts of hot money have been circumventing the capitals controls in recent years (Zhang/Huang 2011, Martin/Morrison 2008, see sections 3.2 and 4.1).

For a tightly fixed exchange rate regime, as in the case of the Chinese US dollar peg from 1995 to 2005 and again from mid 2008 to mid 2010, the transmission of monetary policies is, because of the central bank's commitment to the exchange rate peg, direct. An excessive and lasting monetary expansion of the center economy broadens interest rate differentials. Arbitrage opportunities lead to capital flows, in the form of carry trades<sup>1</sup>, from the center to the periphery. The inflowing capital raises the demand for domestic currency and puts the pegging countries' currencies under appreciation pressure. To maintain the exchange rate peg the central bank is forced to intervene in the foreign exchange market by buying foreign and selling domestic currency. This directly increases foreign exchange reserves and base money on the one hand and reduces domestic interest rates on the other. The monetary expansion, first

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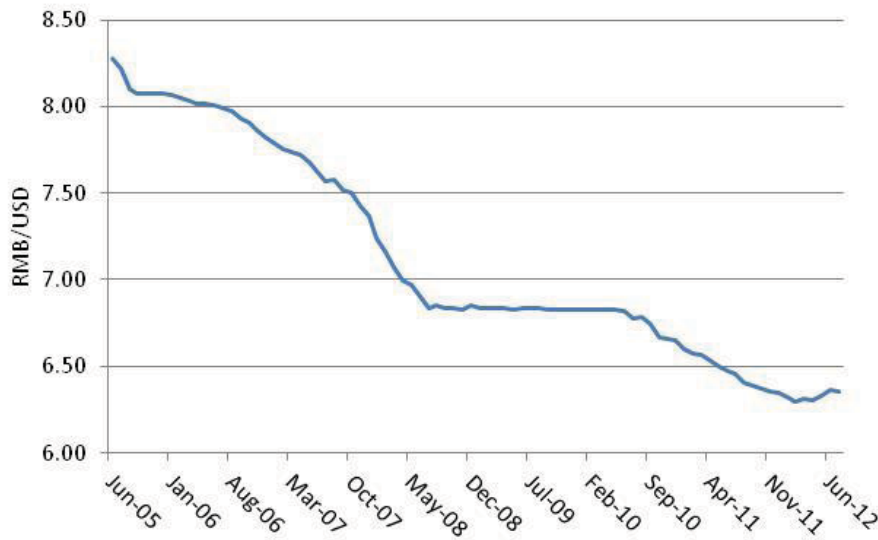
<sup>1</sup> Carry trade is a currency speculation where investors borrow in countries with low interest rates and invest in countries with high interest rates. The interest rate differential is the investor's profit. Additional gains are possible through exchange rate changes, if the investment currency appreciates. As China's capital controls prohibit legal carry trading capital entering China through illegal channels will be referred to as speculative capital or hot money inflows.

abroad and later domestically, leads to a growth in monetary aggregates, investment and GDP. If however, interest rates are too low for too long high inflation, overinvestment and speculative bubbles become likely (Taylor 2009).

These findings apply for the Chinese economy during periods of tight exchange rate pegs. Since 2005 China is officially following a currency basket, which contains 11 currencies with unknown numerical weights (Zhou 2005). Several attempts have been made to disclose the de facto weights of the basket's currencies. The main finding is that the RMB is pegged to the US dollar closely (Sun 2010, Goldstein/Lardy 2009, Frankel/Wei 2008, Schnabl 2006) although since 2005 the RMB gradually appreciated against the US dollar. During the period of financial turmoil from mid 2008 to mid 2010 the RMB was repegged tightly to the US dollar but then gradually appreciated again within a predefined bandwidth.

Since the switch back to gradual appreciation in mid 2010 until January 2012 the maximum appreciation of the RMB against the US dollar per day was 0.59% whereas the maximum depreciation was 0.55%. In comparison the maximum RMB appreciation against the euro per day was almost 2% and the maximum depreciation exceeded 2.5%. In the same period the average RMB appreciation and depreciation against the US dollar was 0.09%. The RMB appreciation and depreciation against the euro was substantially higher with more than 0.5% for both. The resulting de facto exchange rate regime is rather an upward-crawling US dollar peg than a currency basket (figure 1).

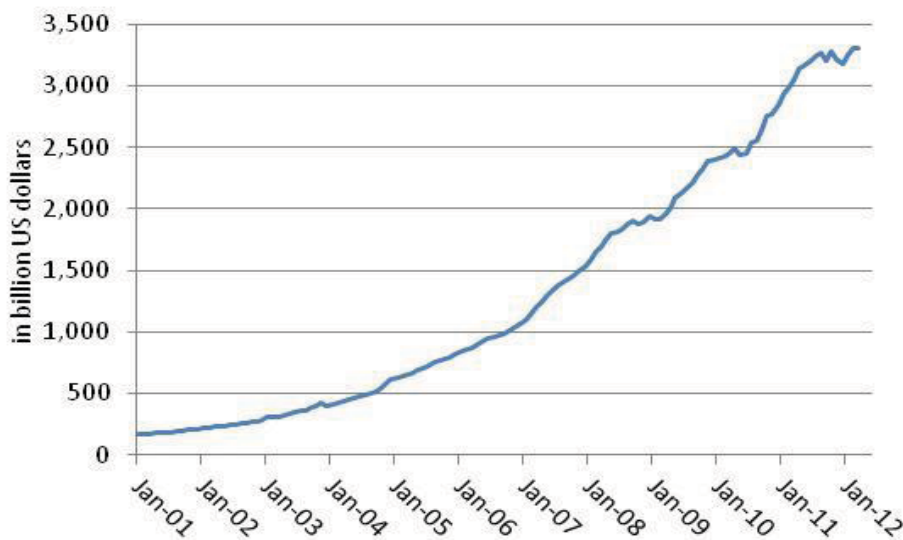
Figure 1: Exchange Rate RMB/ USD



Source: PACIFIC Exchange Rate Service.

The sustained expansive US monetary policy weakens the value of the dollar and places pegged and quasi-pegged currencies under appreciation pressure. To prevent the RMB from sharp appreciation the People’s Bank of China (PBoC) has been intervening almost daily into the foreign exchange market (Greenwood 2008) which has led to a dramatic increase of foreign reserve holdings (figure 2).

Figure 2: China’s Foreign Exchange Rate Reserves



Source: IMF Financial Statistics (IFS).

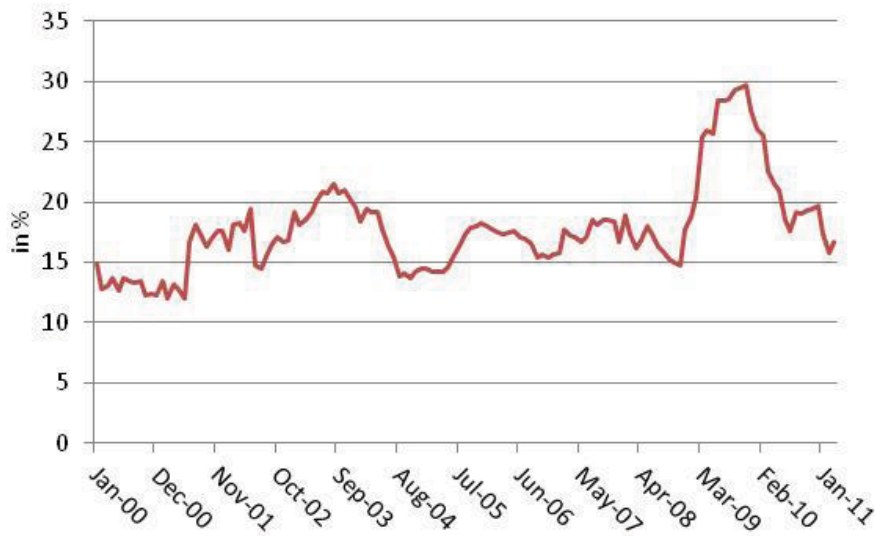


The stock of foreign reserves is portrayed as unsustainable and argued to impose instability on the Chinese economy. Chinese central bank Governor Zhou Xiaochuan stated in April 2011 that the amount of foreign reserves is beyond a “reasonable” level and requires an improved management (Bloomberg 2011). A downside of the massive reserves is that they are mainly composed of US dollars (Schwartz 2010), which leads to high costs if US monetary policy is very loose. The returns on US government bonds are very low and if the US FED continues the quantitative easing a depreciation of the US dollar shrinks the real value of Chinese dollar holdings in terms of domestic currency. This implies beyond export competitiveness a sly incentive for exchange rate stabilization.

As fixing the RMB to the US dollar leads to the import of the expansive US monetary policy price stability is endangered in the medium and long run as the monetary base is growing. To prevent inflationary pressure and possible asset price bubbles the PBoC uses market-based as well as non-market based sterilization measures. The main sterilization instruments are the increase of reserve requirements of commercial banks at the central bank and the issuance of RMB-denominated sterilization bills to the state-controlled banking sector and other financial institutions (McKinnon/Schnabl 2012).

At the first glance the sterilization efforts of the PBoC seem successful. The growth rate of the monetary aggregate M2, which can be regarded as an indicator for future inflation, remained fairly stable over the past decade with the exception of relatively high year-on-year growth rates in 2009/10 (figure 3). The same is true for the inflation rate which also exhibits a spike in 2008/09. Taking into account the strong increase of commodity prices since the beginning of the millennium and that, given its rapid catch-up process China productivity increases should drive up inflation to an average inflation rate of 2.3% over the last 12 years is modest (figure 4).

Figure 3: Money Growth Rates (M2)<sup>2</sup> (year-on-year)



Source: IMF Financial Statistics (IFS).

Figure 4: Chinese Inflation Rate



Source: IMF Financial Statistics (IFS).

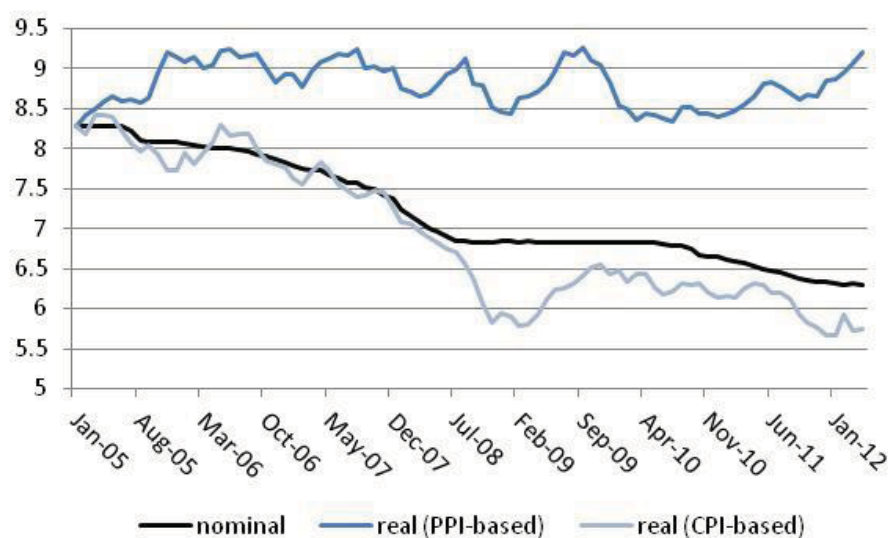
The downsides of the extensive sterilization measures are distortions in the financial as well as goods markets due to the fragmented interest rate structure (McKinnon/Schnabl 2012). The increased reserves requirements and the obligation of banks to purchase sterilization bonds keep domestic monetary conditions tighter higher than without central bank intervention (Greenwood 2008). Yet the low remuneration

<sup>2</sup> The PBoC defines M2 as money in circulation (M0) plus demand deposits (M1) plus time, household and other deposits.

rate on reserve requirements of the state controlled banking sector keeps the interest rate low (Löffler/Schnabl/Schobert 2010). This helps – supported by capital controls – to shield off further speculative capital inflows, but distorts the domestic interest rate structure and therefore financial markets. Financial market development is depressed.

Figure 5 suggests distortions on the goods market. The nominal exchange rate and the real exchange rate approximated by consumer prices of the RMB have been appreciating against the US dollar. In contrast the real exchange rate – approximated by producer prices – remained fairly stable since 2005 and even started to depreciate since 2010. The real exchange rate based on producer price can be seen as a proxy for the competitiveness of the Chinese export sector, compared to international competitors, which is enhanced by the sterilization policy (and other subsidies to the enterprise sector).

Figure 5: Nominal and Real<sup>3</sup> RMB-Dollar Exchange Rate



Data source: IMF (IFS), Main Economic Indicators (OECD).

Through the real exchange rate stabilization the investments in the domestic sector are depressed. Resources, in particular labor and capital, are shifted from the non-exporting into the export industry (Greenwood 2008). While the domestic sector is restricted below its optimal size the export sector is artificially inflated and vulnerable

<sup>3</sup> The real exchange rates are based on the consumer and producer price indices respectively and indexed to 8.277 in January 2005.

to bubble build up. Employment in the export sector depends not only on foreign demand but on the maintenance and probably the expansion of the state subsidies, which further distort the economic structure.

## 2.2 Flexible exchange rate regime

Friedman (1953) argued that flexible exchange rates do play a crucial role in insulating a country from foreign inflationary pressure. Under a flexible exchange rate regime monetary expansion in a foreign country and the resulting inflationary shock are assumed to be absorbed by exchange rate changes. But even under flexible exchange rate regimes monetary spillovers emerge. In contrast to the scenario described above the effects are indirect.

The starting point is, again, the excessive and persisting monetary expansion in the center economy. Based on the center country's economic dominance its interest rate reduction leads, due to increased interest rate differentials, to capital inflows into the periphery. By the expansive monetary policy the US pursue a beggar-thy-neighbour policy (McKinnon 2010). The resulting capital inflows put the currencies of the periphery countries under appreciation pressure, as the demand for their domestic currencies rises. In the case of a flexible exchange rate regime the central bank does not intervene in foreign exchange markets and the increased demand for domestic currency is reflected in an exchange rate appreciation. This erodes the competitiveness of the export industry. The declining exports lead to declining growth and rising unemployment.

To counteract the US beggar-thy-neighbour policy and to restore export competitiveness even countries with de jure flexible exchange rate regime tend to intervene in foreign exchange markets, now on a discretionary basis. The higher the export dependency of growth the more likely is the government's effort to limit the currency's appreciation and/ or to subsidise the domestic export industry. The most effective measure to soften appreciation pressure in the absence of foreign exchange intervention is an interest rate reduction. Due to diminished interest rate differentials carry trades become less attractive; hot money inflows and the resulting appreciation pres-

sure ease. Domestically, the low interest rate policy facilitates investment to restore the competitiveness of the export sector as the cost for credit is reduced. The bottom line is that the reduced interest rates in the US are likely to reduce interest rates in the periphery and, albeit indirectly, even with a flexible exchange rate regime the US' monetary policy is imported.

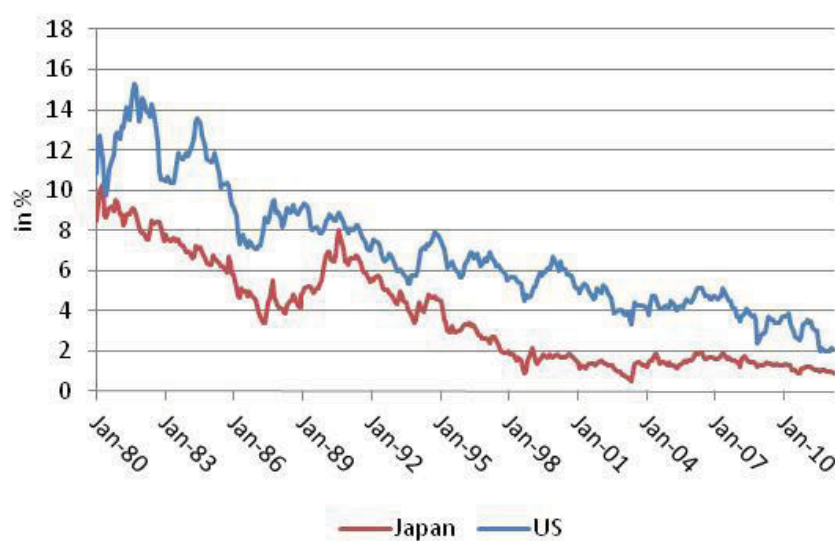
This theoretical finding can historically be supported considering the Japanese economy since the mid 1980s. Japan often serves as a reference model for China since the characteristics of economic development show important parallels with the recent Chinese development (McKinnon 2006). The rapid Chinese catch-up process, its export dependency, current account surplus, massive foreign reserve accumulation and especially the sustained dispute with the US concerning the alleged undervalued exchange rate are reminiscent to Japan since the 1980s. McKinnon and Schnabl (2006) show how the current US-Chinese trade frictions replicate the former US-Japanese ones.

In contrast to the Chinese RMB the Japanese yen has been widely fluctuating since the early 1980s. Political pressure and trade sanctions, known as “Japan bashing”, and in particular the Plaza Agreement in 1985 led to a strong appreciation of the de jure free floating yen against the US dollar (McKinnon/Schnabl 2006). The Japanese government tried to counteract the appreciation of the yen by discretionary foreign exchange intervention, expansive monetary policy and subsidies for the export industry. The result is that even with a de jure floating exchange rate regime the Japanese monetary policy has de facto not been autonomous. The export dependency of the Japanese economy “forced” the Japanese central bank to follow the US Fed's interest rate cuts to soften appreciation pressure. The result is that the highly positive correlated 10-year yields on US and Japanese government bonds gradually decline since the early 1990s (figure 6).<sup>4</sup>

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<sup>4</sup> The lower level of the Japanese bond yield indicates appreciation expectations of the yen versus the dollar (McKinnon/Goyal 2003).

Figure 6: Long-term Interest Rates of Japan and the US



Source: OECD.

As China today exhibits similar structural characteristics as Japan since the mid 1980s predictions for a possible transition to a more flexible exchange rate in China can be made.

The fact that China's economic growth relies to a large extent on the export sector makes a RMB appreciation, which is expected to be the consequence of a freely floating RMB, costly in terms of growth and employment. Therefore the Chinese government is likely to continue to intervene against the appreciation of the RMB discretionarily. In addition, as in Japan, interest rate cuts and export subsidies to maintain export competitiveness are likely. In the short run this benefits the exporting industry and growth (Schnabl 2011). In the long-run the threat of overinvestment and bubbles increases (Ostry et al. 2010) especially if the domestic money supply growth departs above its trend as already seen between 2009 and mid 2010 (figure 3).

As the underdeveloped and shallow Chinese capital market lacks profitable investment opportunities for private investors and investments in foreign assets are limited by capital controls and appreciation expectations capital is likely to go into comparatively small number of Chinese assets, therefore increasing the risk of asset price bubbles. As in Japan in the mid 1980s Chinese property prices recently have risen significantly (Bank for International Settlements 2011). The housing sector is especially vulnerable to speculative bubbles. China is showing similar conditions as Japan and

the US did before the burst of the housing bubbles 1991 and 2007 (Ueda 2011). Ueda (2011) compares the monetary policy in the run up of the housing bubbles of Japan, the US and China based on a Taylor rule. It is shown that in the years prior to the respective housing price peaks<sup>5</sup> the interest rates of the three economies have been well under the levels implied by the Taylor rule. Besides, China shows a similar mood as the US' "this time is different" in the early 2000s and as Japan's "Japan as No. 1" in the 1980s (Ueda 2011).

As the US monetary easing does have an impact on the monetary policies of other economies regardless of the exchange rate regime the assumption of the proponents of a free floating RMB (e.g. Goldstein/Lardy 2009, Prasad 2008, Frankel 2006) that China could gain monetary policy independence by letting the RMB float can be declined. Even under a flexible exchange rate regime the goods as well as financial markets of the economy cannot be insulated from US monetary shocks.

### **3 Bilateral spillover effects**

So far the analysis was static, as monetary spillover effects have been regarded to be exclusively unidirectional from the US to the dollar pegging periphery countries. In the second step, feedback effects from the periphery to the center are scrutinized. Given the rising economic importance and integration of emerging economies, in particular China, in the world economy bilateral effects present a more realistic approach. Especially the feedback effects of the massive Chinese foreign reserve accumulation on the US financial markets and macroeconomic policy decisions trigger a vicious circle of interest rate reductions and quantitative easing which floods the world with ample liquidity.

#### **3.1 International feedback effects of monetary easing in the center economy**

The liquidity pouring from the US to China is unlikely to be fully absorbed in China because financial markets are shallow and domestic investment opportunities are comparatively scarce. For portfolio investments the US is still seen as a safe haven

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<sup>5</sup> As China's housing bubble didn't burst so far the housing price peak is unknown. Ueda (2011) assumed the year 2010 but admits that the estimation of the Taylor rule is difficult for China, as the Chinese authorities don't use interest rates as major monetary policy tool. Therefore the results for China should be treated with caution.

due to highly developed and therefore stable financial markets. Furthermore, as the US dollar dominates the world monetary system most transactions are denominated in US dollar, which makes a reinvestment in US financial markets attractive, as transaction costs are low and the exchange rate risk is null.

To avoid a currency appreciation China constantly intervenes in the foreign exchange market buying US dollars by selling RMB. The sustained purchase of dollars contributes to the massive foreign reserves holdings of about US\$ 3.3tn (March 2012) (see figure 2). Although the currency composition of the Chinese reserves isn't officially revealed Schwartz (2010) estimates that about 60-70 percent are held in US dollars. From 2005 to 2011 China accumulated foreign reserves worth more than \$37bn every year, which implies an average Chinese demand for dollar assets of almost \$26bn per year.

Thus, in addition to the expansive measures taken by the FED, which lower interest rates at the short-end the Chinese demand for US government bonds reduces US long-term interest rates (IMF 2011a). The IMF's Spillover Report for the People's Republic of China (2011a) estimates a rise of about 12 basis points in US long-term yields, if China would reallocate its foreign exchange portfolio by \$100bn from US assets to assets in emerging markets.<sup>6</sup> In December 2011 China held about \$1.13tn in US treasury securities (estimation by the Department of the US Treasury 2012). Based on the IMF (2011a) estimation this implies a possible raise of US long-term yields of more than 130 basis points (1.3 percentage points) if China would completely restructure its portfolio from US to emerging market assets. This rough estimation illustrates that China contributes to the ultra low interest rate environment at the long end of the yield curve.

As long-term interest rates are seen as a proxy for expected inflation, official Chinese bond purchases encourage the US Fed to keep interest rates low. In the real sector the state-subsidized cheap Chinese export products undercut the consumer prices in

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<sup>6</sup> The IMF argues that the analysis is only partial and if China would purchase more assets of advanced than emerging economies the results would be less pronounced.



the US. The resulting low inflation further encourages the Fed to continue its quantitative easing as it is not violating its price stability mandate.

The large Chinese holdings of dollar assets in combination with the US low interest rate policy put China in a “dollar-trap” (Krugman 2009). A sustained quantitative easing of the US devalues the US dollar and debt held abroad is be inflated away if the dollar depreciates. Foreign creditors would have to share the US debt burden as their dollar savings decrease in term of domestic currency. China would be the main loser of this game as the US’ biggest creditor (Department of the US Treasury 2012). Thus, the value of Chinese reserves in domestic currency is also contingent on Chinese action. If the Chinese government opts for a more flexible exchange rate regime, as foreign as well as Chinese politicians (e.g. U.S. Department of the Treasury 2011, Hu 2010) and economists (e.g. Goldstein/Lardy 2009, Prasad 2008) demand, the RMB will appreciate and the foreign reserves will lose value. The process would be accelerated if China would sell US dollar reserves, as the US dollar would depreciate and US interest rates would rise at the long end even faster. Both effects would diminish US demand for foreign goods, in particular Chinese goods.

### **3.2 Emergence of global excess liquidity and hot money**

The result is that since the turn of the millennium the world faces a significant increase in global liquidity. According to Bernanke (2005) this “savings glut” is emanating from the oil-exporting countries and East Asian emerging economies since the Asian crisis. Belke/Gros (2010) argue that the “liquidity glut” is caused by the expansive US monetary policy in the aftermath of the dotcom bubble burst. Irrespective from the debate concerning the origin of excess liquidity<sup>7</sup> this section focuses on one result of excess global liquidity; increased hot money flows to emerging countries, in particular China.

Hot money is short-term capital which is speculative and moves very quickly in and out of a country particularly through illegal channels (see section 4.1). It primarily seeks for profits from exchange rate changes and/or interest rate differentials

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<sup>7</sup> To define and measure excess liquidity Ruffer and Stracca (2006) compare broad monetary aggregates with nominal GDP.

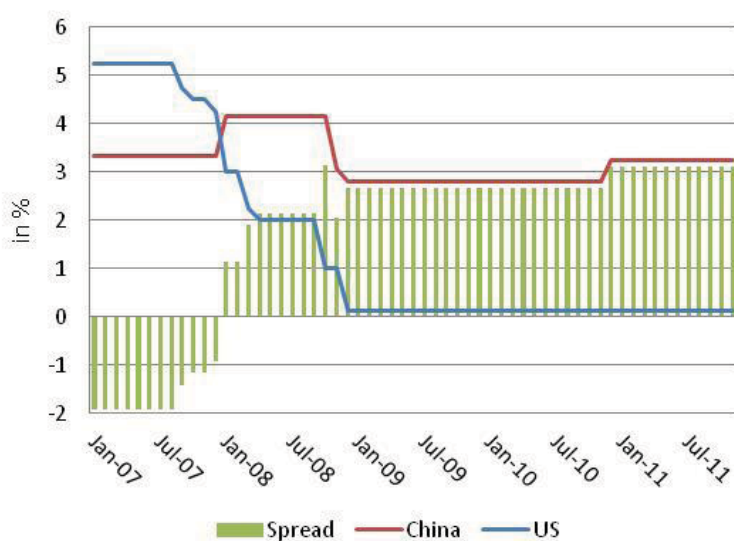
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(Zhang/Huang 2011). Hot money flows are highly volatile and procyclical, potentially destabilizing the target economy (Pettis/Wright 2008).

The fact that hot money is entering China is commonly acknowledged, but the precise quantification is, due to the illegal character of the flows, difficult and controversially discussed (Zhang/Huang 2011, Schnabl 2010, Martin/Morrison 2008). In 2008 the Economist (2008) stated that “[d]espite strict capital controls, China is being flooded by the biggest wave of speculative capital ever to hit an emerging economy”. The Chinese State Administration of Foreign Exchange (SAFE) (2011) claims to have “strengthened the monitoring and management of cross-border capital flows” “to crack down on hot money and other illegal and irregular capital inflows”.

The reasons for hot money inflows to China can be subdivided into push and pull factors. Push factors originate in the US where unconventional monetary policies and low interest rates encourage the outflow of capital. The Federal Open Market Committee (2012) “guaranteed” a federal funds rate between 0 and 0.25% at least until late 2014. The ultra low interest rates in the US have increased interest rate differentials between the center and periphery countries. Figure 7 plots the US and Chinese discount rates, which are the interest rates charged for short-term borrowing from the central banks, and the resulting spread. In the beginning of 2008 the US rate fell under the Chinese rate with the spread turning positive. The almost unlimited possibility to borrow cheap money in the US encouraged carry trades and hot money flows into China as profit margins increased.

Figure 7: US and Chinese Discount Rates and the Resulting Spread



Source: IMF Financial Statistics (IFS), author's calculations.

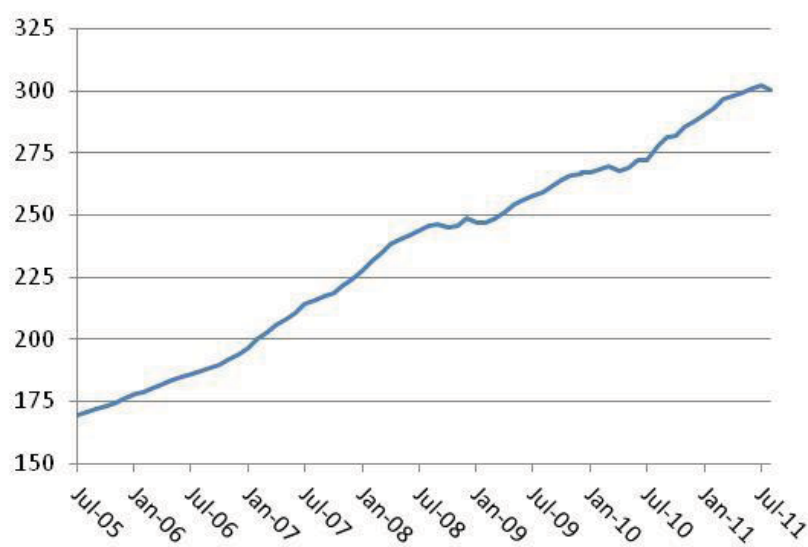
The easy US monetary policy does have a negative impact on the expected value of the dollar in the medium to long run. As a depreciation of the US dollar and an appreciation of the RMB are expected the capital flows into China increase as exchange rate gains can be realized. In addition, the political pressure on the part of the US on China to appreciate the RMB remains intense influencing the expectations concerning RMB appreciation depreciation.

Pull factors on the other hand are Chinese policies which encourage capital inflows, even though unintended. Firstly, China itself contributes to the existing interest rate differentials with the US, as the high Chinese demand for US government bonds reduces long-term interest rates in the US. Interest rate differentials were further broadened when the Chinese central bank raised the discount rate in the end of 2010 to cool down the overheating Chinese economy. Secondly, the upward-crawling peg (figure 1) signals future appreciation. The risk of speculation on RMB appreciation is low as a sudden reversal of this exchange rate strategy is not expected because of Beijing's policy of small steps and rigid management of the dollar peg.

To visualize the appreciation pressure on the RMB, caused by the combination of push and pull factors, the Milken Institute created the Renminbi Pressure Indicator. The indicator measures the appreciation pressure on the RMB against the US dollar. It is based on percent changes in the foreign reserves and the spot exchange rate as

well as on the change in domestic interest rates. An increasing indicator displays rising appreciation pressure on the RMB. Figure 8 shows that although the Chinese exchange rate regime changed and the RMB appreciated by about 21% against the US dollar since July 2005 the pressure indicator increased in the same time by almost 80%. The upward sloping curve shows the rising RMB appreciation expectations.

Figure 8: Renminbi Pressure Indicator



Source: Milken Institute (January 2000 = 100).

The combination of push and pull factors fuels capital inflows into China as currency speculation is turned into a one way bet (McKinnon/Schnabl 2009a, Martin/Morrison 2008). The excess capital flowing into China is likely to lead to overinvestment, with the threat of asset price bubbles rising (Ostry et al. 2010). Economically unviable investments would become apparent, when capital flows are accelerated by herd behavior (IMF 2011b). China's capital controls are unlikely to prevent the outflow, as existing controls mainly aim at inflows. Outflows, however, were since 2001 liberalized and even encouraged.<sup>8</sup> The turnaround of international capital flows seems at least theoretically conceivable. The Chinese economic growth is expected to decline (IMF 2012), the inflation cools down since the end of 2011 and central bank governor Zhou states, that the exchange rate of the RMB might be close to equilibrium (Hu/Zhang 2012). A capital flow reversal could result in sharp monetary tighten-

<sup>8</sup> The "going out" strategy refers to the promotion of outward flowing FDIs mainly by state-owned enterprises (Ma 2007, Otani et al. 2011).

ing, increasing interest rates, loss-making investments, non-performing loans and a destabilized financial sector. A stumbling Chinese economy would have in turn negative effects on the US economy.

#### **4 Prevention of unintended policy transmission**

There are several strategies to prevent speculative capital inflows and therefore unintended policy transmission from center to periphery countries. Two strategies are analyzed. Capital controls - the Chinese Wall for the financial sector - and international cooperation in form of closer European-Chinese monetary policy coordination.

##### **4.1 Chinese Wall**

In the aftermath of the Asian crisis a fierce debate concerning capital controls aroused. The discussion covered the pros and cons as well as the question of in which situation and for which countries capital controls may be advisable. The downsides of capital controls result not only from high costs for regulatory efforts and bureaucracy but also from disturbed efficiency of the capital market allocation and declining investment. A further downside is the “protectionist” or “mercantilist” character of capital controls which fragments international capital markets.

Although not seen as a first best solution, the common consensus after the Asian crisis was that for emerging economies in financially turbulent times the implementation of capital controls could be beneficial in the short and medium run (Eichengreen 1998, Krugman 1998, McHale 1998). Eichengreen (1998) argues that free capital movement in emerging markets should rather be an exemption than the rule, as financial markets are shallow, the risk management of the private sector is underdeveloped and the capacities of the regulators are limited. In the light of welfare considerations Gallagher (2012) labels capital controls as “correctionist” rather than as “protectionist” policies to stabilize financial markets.

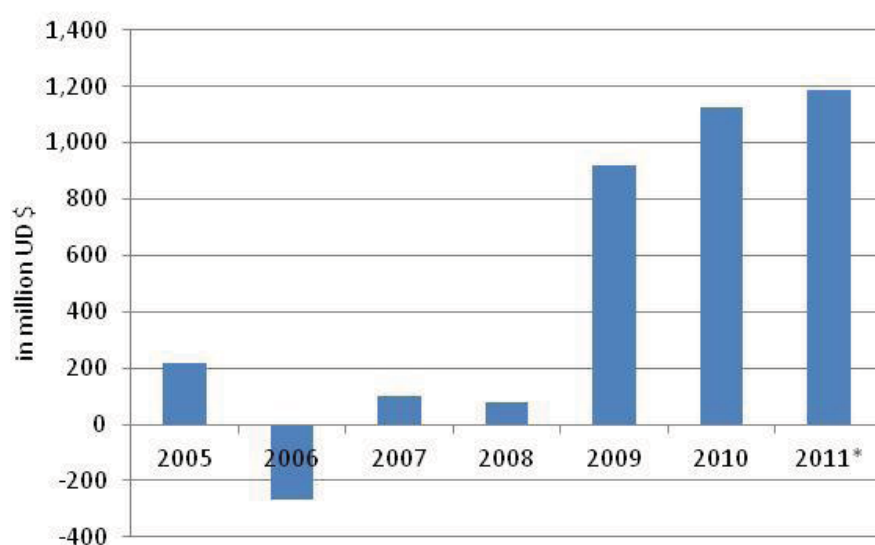
Korinek (2011) argues that in the absence of regulations private market participants tend to excessive short-term borrowings, which increases the level of financial fragility. For market participants it is rational not to internalize the costs of their actions in form of financial market instability. Welfare losses caused by volatile financial and

goods markets in the event of a financial crisis would have to be borne by the emerging economy. Therefore capital control can be a way to discourage risky short-term borrowing and thus ensure independent domestic monetary policy and enhance the financial stability of emerging markets.

In the middle of the global financial crisis also the International Monetary Fund (Ostry et al. 2010) and the G20 (Cannes G20 Summit 2011) argue in favour of short-term capital controls to protect emerging countries from speculative capital flows. The main reason is the current flow of hot money into emerging economies and the resulting threat of boom-and-bust cycles (IMF 2011b). This is in particular true for China as capital inflows surge due to RMB appreciation expectations, relatively high interest rates compared to the US (see figure 7) and constantly high growth.

But how effective is the Chinese Wall of the financial sector to shield China off speculative capital inflows and to enhance monetary policy independence? Among others, Pettis and Wright (2008) argue that a substantial part of the foreign reserve accumulation is caused by hot money inflows. The argument of the authors is based on the simplest way to approximate hot money flows: changes in international reserves reduced by the current account surplus and net FDI (figure 9). This approach is most likely to underestimate the hot money flows as hot money inflows in the current account are masked as FDIs and by trade mis-invoicing which is not captured in the calculation (Zhang and Huang 2011). Furthermore, Tsuyuguchi (2009) argues that hot money flows are concealed in the financial account most probably in the liabilities under “other investments”. This is in line with Zhang and Huang (2011) who suspect hot money flows behind the strong fluctuations in short term borrowing. In addition undocumented and unjustifiable transactions reported in errors and omissions may reflect hot money.

Figure 9: Hot Money Flows to China



Source: SAFE, author's estimations (hot money flows =  $\Delta\text{Res} - \Delta\text{CA} - \text{FDI (net)}$ ), \* first three quarters of 2011.

Even though the capital controls aren't watertight, they are considered to be an important and efficient macroeconomic tool to support financial stability and monetary policy independence (Gallagher 2012, Qureshi et al. 2011, Otani et al. 2011, Ostry et al. 2010, Ma/McCauley 2008, Xiao/Kimball 2006). Even if some investors are able to circumvent the existing controls, the bypassing is not only illegal but costly. Because the efforts and expenditures of the bypassing derogate profits, thus the capital controls act as "sand in the wheels" reducing illegal capital flows (Ostry et al. 2010). Especially in times of high financial market volatility and abundant global liquidity the control of hot money flows is important. In this sense the easy monetary conditions in the US have promoted capital controls in emerging markets.

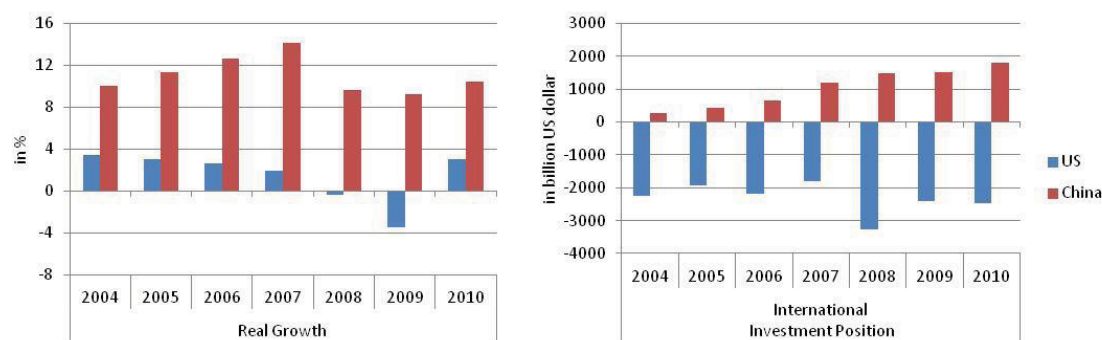
## 4.2 European-Chinese policy coordination

So far little research exists regarding closer European-Chinese monetary policy coordination.

In the current constellation China is directly exposed to US monetary policy making. Given the difference in the development stages a direct import of US monetary policy to China has inflationary and distorting effects. In particular in the aftermath of the subprime crisis the structural characteristics of the economies differ. China's growth rates went quickly back to normal, whereas the US economy remains sluggish.

The real growth levels and the international investment position (figure 10) widened during the financial crisis even further implying different interests concerning monetary policies and the exchange rate development.

Figure 10: Two Speed Development



Source: IMF Financial Statistics (IFS).

The IMF (2012) projects a GDP growth rate of 8.2% (8.8%) for China and 2.1% (2.4) for the US for 2012 (2013). The sluggish fundamentals suggest a sustained expansive financial and especially monetary policy in the US. The Mundell-Fleming framework implies that an expansive fiscal policy under a flexible exchange rate regime isn't effective if not accompanied by low interest rates, as without expansive monetary policy debt financed public expenditure would crowd out private investment and exports. The expansive monetary policy not only stimulates the economy by low interest rates and depreciation, it also keeps the debt service of highly indebted private and public agents under control. As foreign debt is denominated in domestic currency the US are not threatened by a financial crisis triggered by depreciation. Instead the real value of the foreign debt is inflated away as the dollar depreciates.

To avoid these unintended monetary policy spillovers China must gain more independence from the US monetary policy. For the transformation of the currently asymmetric world monetary system into a more balanced system the hegemony of the US dollar must be challenged. The Chinese central bank governor Zhou Xiaochuan (2009) made a first step in this direction. He suggested a switch from the US dollar as global anchor and reserve currency to the IMF's special drawing rights. Since a super-sovereign reserve currency, as proposed in the 1940s by John Maynard Keynes



(1980), would be independent from national monetary policies. The US dollar would lose its dominating role as international currency and the US monetary expansion couldn't create a vicious circle of interest rate reductions and excess global liquidity.

Alternatively, China could promote the RMB to become an international reserve currency (Prasad/Ye 2012). But with shallow financial markets, distorting non-market based sterilization operations, a tight exchange rate peg and capital controls this enterprise is deemed to fail. The realization of both suggestions seems currently unlikely as Chinese capital markets and SDR capital markets are not developed enough to foster an international currency.

Therefore an alternative approach could be closer policy coordination between Europe and China, respectively East Asia. For China a tighter peg of the RMB to the euro and a bigger euro share in the foreign reserves would allow for less dependence on US monetary policy. Speculative capital inflows could be reduced and the real value of foreign exchange reserves preserved. The enhanced RMB-euro exchange rate stability would be beneficial for East Asian-European trade as uncertainties are reduced. A euro peg for China would be economically justified, as Europe replaced the US as China's main trading partner. Furthermore the closer link to the euro would reduce the negative spillovers of US monetary expansion (Oksanen 2010) and create a counterbalance in the asymmetric world monetary system. As the decision making of the European central bank is less dependent on political influence with price stability as the primary objective, the euro could challenge the dollar as stable reserve currency. China would benefit from higher monetary stability and reduce the dependence on a single country's monetary policy.

For the euro area closer policy coordination with China would imply better growth options via more intensive trade relations and financial support in the European debt crisis. The increased use of the euro as reserve currency would go along with substantial seigniorage gains. The profit generated by the European Central Bank could be used to overcome the current debt crisis and to re-establish financial and therefore monetary stability in Europe (Schnabl 2012). The stability of the euro as an international currency would be enhanced. This in turn is in the vested interest of China, if

the RMB is pegged to the euro and Europe is the most important Chinese export market.

The intensified currency competition could force the US to take more responsibility for their monetary policy actions, which seems indispensable for a global exit from excessive monetary expansion. The reason is that even with a closer European-Chinese policy coordination an exit from expansive monetary policy is difficult while interest rates in the US remain low. This is especially true for export-dependent nations, as an independent exit is likely to crowd out exports (Belke/Schnabl 2010).

## 5 Economic policy conclusions

The purpose of the paper was to analyze to what extent the Chinese authorities are able to maintain monetary policy independence from the US. The argument that a flexible exchange rate regime would enable China to gain a higher degree of independence can be declined. Especially in the case of the export-dependent China the switch to a flexible exchange rate regime alone wouldn't enhance the independence of domestic monetary policy. In an environment of globally low interest rates high economic and political costs of appreciation would provide a strong incentive to cut domestic interest rates.

China's economic strength and especially the huge amount of foreign reserves lead to mutual feedback effects via financial markets. The high Chinese demand for US dollar reduces the yields of long-term US interest rates additionally to the short-term interest rate cuts of the Fed. The resulting low interest rate environment enhances carry trades and hot money flows from the US to emerging markets and in particular China. The results for China are structural distortions originating in sterilization measures, overinvestment in the export sector and the threat of speculative bubbles.

In the current situation China is already exposed to large hot money inflows seeking profit in interest rate differentials and the expected currency appreciation. Even though China's capital controls are not watertight, they are an important macroeconomic tool to ensure macroeconomic stability in the short and medium term. Espe-

cially in financially turbulent times the controls limit volatile speculative capital inflows and therefore act as a “corrective” for financial market stability.

Yet, as a complete insulation from US monetary policy doesn't seem possible, a closer European-Chinese monetary policy coordination should be considered. Both parties would gain economically and politically. This alliance could create a counterbalance to the dominating US dollar. The enhanced competition between the dollar and the euro as international reserve currencies could persuade the US to take more responsibility for their monetary policy actions, which is inevitable to stabilize the world financial system.

## References

- Bank for International Settlement (2011): Property price statistics, <http://www.bis.org/statistics/pp.htm>.
- Belke, Ansgar; Gros, Daniel (2010): Global Liquidity, World Savings Glut and Global Policy Coordination. DIW Berlin, Discussion Paper, No. 973.
- Belke, Ansgar; Schnabl, Gunther (2010): Finanzkrise, globale Liquidität und makroökonomischer Exit. Wirtschaftswissenschaftliche Fakultät der Universität Leipzig, Working Paper, No. 92.
- Bernanke, Ben (2005): The Global Saving Glut and the U.S. Current Account Deficit, At the Sandridge Lecture, Virginia Association of Economists, Richmond, Virginia.
- Bloomberg (2011): Zhou Says \$3 Trillion China Reserves Have Risen Beyond 'Reasonable' Level, By Bloomberg News - Apr 19, 2011, <http://www.bloomberg.com/news/2011-04-18/china-must-cut-foreign-exchange-reserves-pboc-s-zhou-says-1-.html>.
- Borio, Claudio; Disyatat, Piti (2011): Global imbalances and the financial crisis: Link or no link? BIS Working Paper No. 346.
- Cannes G20 Summit (2011): G20 Coherent Conclusions for the Management of Capital Flows Drawing on Country Experiences, as endorsed by G20 Finance Ministers and Central Bank Governors.
- China View (2009): Premier worries about safety of Chinese assets in U.S., Speech of Wen Jiabao on 13 March 2009, [http://news.xinhuanet.com/english/2009-03/13/content\\_11005049.htm](http://news.xinhuanet.com/english/2009-03/13/content_11005049.htm)

- Department of the Treasury (2012): Major foreign holders of treasury securities, Federal Reserve Board, January 18, <http://www.treasury.gov/resource-center/data-chart-center/tic/Documents/mfh.txt>.
- Deutsche Bank Research (2008): Overheating indicator still on uptrend, Global risk analysis, Frankfurt am Main.
- Economist (2008): Capital inflows to China, Hot and bothered, In: The Economist, June 26th 2008.
- Edwards, Sebastian (1999): How effective are capital controls? National Bureau of Economic Research, Working Paper, No. 7413.
- Eichengreen, Barry (1998): Capital Controls: Capital Idea or Capital Folly? University of California-Berkeley, Mimeo.
- Eurostat (2011): China, EU bilateral trade and trade with the world, China - Trade Statistics, [http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc\\_113366.pdf](http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113366.pdf).
- Federal Open Market Committee (FOMC) (2009): Press Release, March 18, by the Board of Governors of the Federal Reserve System.
- Federal Open Market Committee (FOMC) (2010): Statement Regarding Purchases of Treasury Securities, Federal Reserve Bank of New York, November 3.
- Federal Open Market Committee (FOMC) (2012): Press Release, March 13, 2012.
- Fleming, John Marcus (1962): Domestic Financial Policies under Fixed and under Floating Exchange Rates, IMF Staff Papers.
- Frankel, Jeffrey (2006): On the Yuan: The Choice between Adjustment under a Fixed Exchange Rate and a Flexible Exchange Rate. Mimeo.
- Frankel, Jeffrey; Wei, Shang-Jin (2008): Estimation of De Facto Exchange Rate Regimes: Synthesis of the Techniques for Inferring Flexibility and Basket Weights, NBER Working Paper No. 14016.
- Friedman, Milton (1953). The Case for Flexible Exchange Rates, in: Essays in Positive Economics, Chicago University Press, Chicago.
- Gallagher, Kevin (2012): The Myth of Financial Protectionism: The New (and Old) Economics of Capital Controls, Political Economy Research Institute, University of Massachusetts Amherst, Working Paper Series No. 278.
- Greenwood, Jonh (2008): The Costs and Implications of PBC Sterilization, Cato Journal, Vol. 28, No. 2.

- Hu, Shuli; Zhang, Jiwei (2012): Strategize, Adapt, Reform, In: Caixin, interview with People's Bank of China Governor Zhou Xiaochuan.
- Hu, Xiaolian (2010): Exchange Rate Regime Reform and Monetary Policy Effectiveness, Deputy Governor of the People's Bank of China, Speech on July 26, 2010.
- Hu, Yu-We (2010): Management of China's Foreign Exchange Reserves: A Case Study on the State Administration of Foreign Exchange (SAFE), European Commission, Economic Paper No 421.
- International Monetary Fund (IMF) (2011a): People's Republic of China, Spillover Report For The 2011 Article IV Consultation And Selected Issues, IMF Country Report No. 11/193, Washington.
- International Monetary Fund (IMF) (2011b): United States, Staff Report for the 2011 Article IV Consultation, IMF Country Report No. 11/201, Washington.
- International Monetary Fund (IMF) (2012): World Economic Outlook, Growth Resuming, Dangers Remain, World Economic and Financial Surveys.
- Keynes, John Maynard (1980): Collected Writings Vol. 25, Activities 1940 – 1944, Clearing Union, Shaping the Post-War World.
- Korinek, Anton (2011): The New Economics of Capital Controls Imposed for Prudential Reasons, IMF Working Paper 11/298.
- Krugman, Paul (1998): Saving Asia: It's time to get radical, in: Fortune Magazine 7th Sept. 1998.
- Krugman, Paul (2009): China's Dollar Trap, In. The New York Times, April 2.
- Leightner, Jonathan (2010): How China's holdings of foreign reserves affect the value of the US dollar in Europe and Asia, China and World Economic, Vol. 18, No. 3.
- Löffler, Axel; Schnabl, Gunther; Schobert, Franziska (2010): Inflation Targeting by Debtor Central Banks in Emerging Market Economies, CESifo Working Paper No. 3138.
- Ma, Guonan; McCauley, Robert (2008): Efficacy of China's capital controls: Evidence from price and low data. In: Pacific Economic Review No 13 (1).
- Makin, John (2011): Why China Overheats, American Enterprise Institute for Public Policy Research.
- Martin, Michael; Morrison, Wayne (2008): China's "Hot Money" Problems, Foreign Affairs, Defense, and Trade Division, CRS Report for Congress.

- McHale, John (1998): Capital Account Convertibility and Capital Controls in Emerging Market Countries: Some Themes from the First Meeting, Harvard University, National Bureau of Economic Research.
- McKinnon, Ronald (2006): China's Exchange Rate Trap: Japan Redux?, *American Economic Review*, May 2006.
- McKinnon, Ronald (2010): Beggar-Thy-Neighbor Interest Rate Policies, Stanford University.
- McKinnon, Ronald; Goyal, Rishi (2003): Japan's Negative Risk Premium in Interest Rates: The Liquidity Trap and Fall in Bank Lending, *The World Economy*.
- McKinnon, Ronald; Schnabl, Gunther (2009a): China's Financial Conundrum and Global Imbalances, BIS Working Papers No 277.
- McKinnon, Ronald; Schnabl, Gunther (2009b): The Case for Stabilizing China's Exchange Rate: Setting the Stage for Fiscal Expansion, *China and World Economic*, Vol. 17, No. 1.
- McKinnon, Ronald; Schnabl, Gunther (2012): China and its dollar exchange rate: A worldwide stabilizing influence? *The World Economy*.
- Milken Institute (2011): Renminbi Pressure Indicator.
- Mundel, Robert (1963): Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates, *Canadian Journal of Economics and Political Science*.
- Mundel, Robert (1968): *International Economics*, Macmillan, New York.
- Oksanen, Heikki (2010): Pegging the Renminbi to a Basket - Facts, Prospects and Consequences. CESifo Group Munich CESifo Working Paper Series, No 3254.
- Ostry, Jonathan; Ghosh, Atish; Habermeier, Karl; Chamon, Marcos; Qureshi, Mahvash; Reinhardt, Dennis (2010): Capital Inflows: The Role of Controls. International Monetary Fund, IMF Staff Position Note, SPN/10/04.
- Otani, Ichiro; Fukumoto, Tomoyuki; Tsuyuguchi, Yosuke (2011): China's Capital Controls and Interest Rate Parity: Experience during 1999 – 2010 and Future Agenda for Reforms, Bank of Japan Working Paper Series, No.11-E-8.
- Ouyang, Alive; Rajan, Ramkishan; Willett, Thomas (2007): China as a reserve sink: The evidence from offset and sterilization coefficients, Hong Kong Institute for Monetary Research, Working Paper, No. 10/2007.

- Pettis, Michael; Wright, Logan (2008): Hot money poses risks to China's stability, Financial Times, Published: July 13 2008.
- Prasad, Eswar; Lei Ye (2012), "The Renmibi's Role in the Global Monetary System", IZA Discussion Paper, No. 6335.
- Prasad, Eswar; Rumbaugh, Thomas; Wang, Qing (2005): Putting the Cart before the Horse Capital Account Liberalization and Exchange Rate Flexibility in China. IMF Policy Discussion Paper, Asia and Pacific Department.
- Qureshi, Mahvash; Ostry, Jonathan; Ghosh, Atish; Chamon, Marcos (2011): Managing Capital Inflows: The Role of Capital Controls and Prudential Policies, NBER Working Paper No. 17363.
- Reade, James; Volz, Ulrich (2010): Chinese Monetary Policy and the Dollar Peg, School of Business & Economics, Discussion Paper No. 2010/35, FU Berlin.
- Rüffer, Rasmus; Stracca, Livio (2006): What is global excess liquidity, and does it matter?, ECB Working Paper No 696.
- Schnabl, Gunther (2006): The Evolution of the East Asian Currency Baskets – Still Undisclosed and Changing, CESifo Working Paper Series No. 1873.
- Schnabl, Gunther (2010): The Role of the Chinese Dollar Peg for Macroeconomic Stability in China and the World Economy, Working Papers on Global Financial Markets No. 13.
- Schnabl, Gunther (2011): Strukturelle Verzerrungen im Währungskrieg. In: Wirtschaftsdienst, 91. Jg., Heft 2.
- Schnabl, Gunther (2012): Monetary Policy Reform in a World of Central Banks, Working Paper on Global Financial Markets, No. 26.
- Schwartz, Paul (2010): Quarterly Update: Foreign Exchange Reserves in Brazil, Russia, India, and China, Council on Foreign Relations.
- State Administration of Foreign Exchange (SAFE) (2011): Continuously Deepening Reform of the Foreign Exchange Administration System and Actively Preventing Risks of Cross-border Capital Flows, 2011-08-04.
- Sun, Jie (2010): Retrospect of the Chinese Exchange Rate Regime after Reform: Stylized Facts during the Period from 2005 to 2010, China and World Economic, Vol. 18, No. 6.

Taylor, John (2009): Getting off track. How government actions and interventions caused, prolonged and worsened the financial crisis, Hoover Institution Press, Stanford University.

Tsuyuguchi, Yosuke (2009): The recent flow of “hot money” in China, Center for Monetary Cooperation in Asia, Bank of Japan Review.

U.S. Department of the Treasury (2011): Report to Congress on International Economic and Exchange Rate Policies, Office of International Affairs.

U.S. Department of the Treasury (2012): Major foreign holders of treasury securities

Ueda, Kazuo (2011): Japan’s Bubble, the USA’s Bubble and China’s Bubble, China and World Economic, Vol. 19, No. 1.

Xiao, Fengjuan; Kimball, Donald (2006): Effectiveness and Effects of China’ Capital Controls, Central University of Finance and Economics Beijing.

Zhang, Liquing; Huang, Zhigang (2011): Do hot money inflows fuel asset bubbles in China? School of Finance, Central University of Finance and Economics, Beijing, China.

Zhou, Xiaochuan (2005): Speech of Governor Zhou Xiaochuan, At the Inauguration Ceremony of The People’s Bank of China Shanghai Head Office, August 10.

Zhou, Xiaochuan (2009): Reform the International Monetary System, People’s Bank of China.

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