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(De)Stabilizing Exchange Rate Strategies in East Asian Monetary and Economic Integration

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(De)Stabilizing Exchange Rate Strategies in East Asian Monetary and Economic Integration*

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Abstract

The East Asian monetary integration process is at the crossroads. Given very benign liquidity conditions in the US, the prevailing common US dollar peg has contributed to growing macroeconomic and financial instability in the region. This has sparked demands to embark on an independent monetary integration process in East Asia. The paper shows that, however, neither the Japanese yen nor the Chinese yuan can challenge the US dollar as anchor currency in the region. Large fluctuations of the Japanese yen against the US dollar have undermined the potential of the Japanese yen to become a regional anchor currency. Exchange rate stability of the Chinese yuan against the US dollar has enhanced intra-regional exchange rate stability and growth, stressing the potential of the Chinese yuan to emerge as a regional anchor currency. Yet, it is shown that underdeveloped Chinese capital markets and financial repression originating in US low interest rate policies constitute an insurmountable impediment for the Chinese yuan to gain anchor currency status in East Asia. Empirical estimations provide evidence in favour of positive growth effects of the exchange rate stability against the US dollar in East Asia.

Keywords: Japanese yen, Chinese yuan, intra-regional trade, informal dollar standard, exchange rate stabilization, business cycle stabilization, internationalization of the Chinese yuan.

JEL: F43, E42, F31, R11

1 Introduction

East Asia¹ is on an informal dollar standard. Prosperous international and intra-regional trade and capital flows are predominantly invoiced in US dollars (McKinnon 2013). Governments of several generations of tiger economies including the emergent giant China stabilize their exchange rates against the US dollar to reduce transaction costs for international and intra-regional trade and capital flows. Burgeoning trade has been at the core of an impressive economic catch-up process, which was pioneered by Japan and has been most recently led by high-growth China. Whereas the fluctuations of the freely floating Japanese yen have remained a source of instability in region, the Chinese US dollar peg has acquired a pivotal stabilizing role (McKinnon & Schnabl 2012).

Yet, the East Asian consensus on macroeconomic stabilization based on a common external US dollar peg is at risk. Since the turn of the millennium the large scope of monetary expansion in the US (and other large industrialized countries) has contributed to rising capital inflows into the East Asian emerging market economies (Balakrishnan et al. 2012). China and the smaller East Asian economies have been under political pressure to allow for more exchange rate flexibility and appreciation of their currencies (Frankel 2006; Bergsten 2010). Despite growing exchange rate flexibility against the US dollar, all East Asian countries have accumulated immense US dollar reserves, of which the monetary effects have become a threat to macroeconomic and financial stability in the region (Löffler et. al. 2013).

For this reason, a wide range of literature discusses alternative exchange rate policies for East Asia. Ogawa and Kawasaki (2008), Ito (2009) as well as Ma and McCauley (2010) have proposed diversified currency baskets to reduce East Asia's dependency on the US dollar. With a focus on China Henning (2012) as well as Subramanian and Kessler (2012) find evidence of a de facto Chinese yuan bloc in East Asia, which challenges the dominance of the US dollar. The notion of the Chinese yuan bloc has increasingly displaced the idea of the Japanese yen taking over the role of a regional anchor (Ito et al. 2010). Despite Chinese attempts to liberalize capital markets as a pre-

¹ We define East Asia as China, Japan, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand. The smaller East Asian economies Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand will be labeled as SEA.

* We thank Chris Jürschik for excellent research assistance.

requisite for the internationalization of the Chinese yuan (to gain regional anchor currency status), the Japanese capital markets remain the most developed and largest in the region thereby allowing Japan as the only country in the region to float its currency. We expand the previous literature by assessing the role of the Japanese yen and Chinese yuan in the East Asian monetary integration process from the perspective of macroeconomic stabilization originating in exchange rate stabilization. Whereas in the past the floating Japanese yen has been an important source of economic instability in the region (McKinnon & Schnabl 2003; Mundell 2003), the tight peg of the Chinese yuan against the US dollar has become increasingly a stabilizing moment for East Asian economic development. That should further strengthen the Chinese yuan as an anchor currency in the region. We show, however, that the emergence of the Chinese yuan as an international currency in the region is conflicted, which reinforces the dominant role of the US dollar. An empirical investigation provides evidence in favor of growth enhancing effects of exchange rate stability against the US dollar, albeit beggar-thy-neighbor policies and therefore overall exchange rate volatility in the region may strengthen in the future.

2 International Trade and Intra-Regional Trade Integration in East Asia

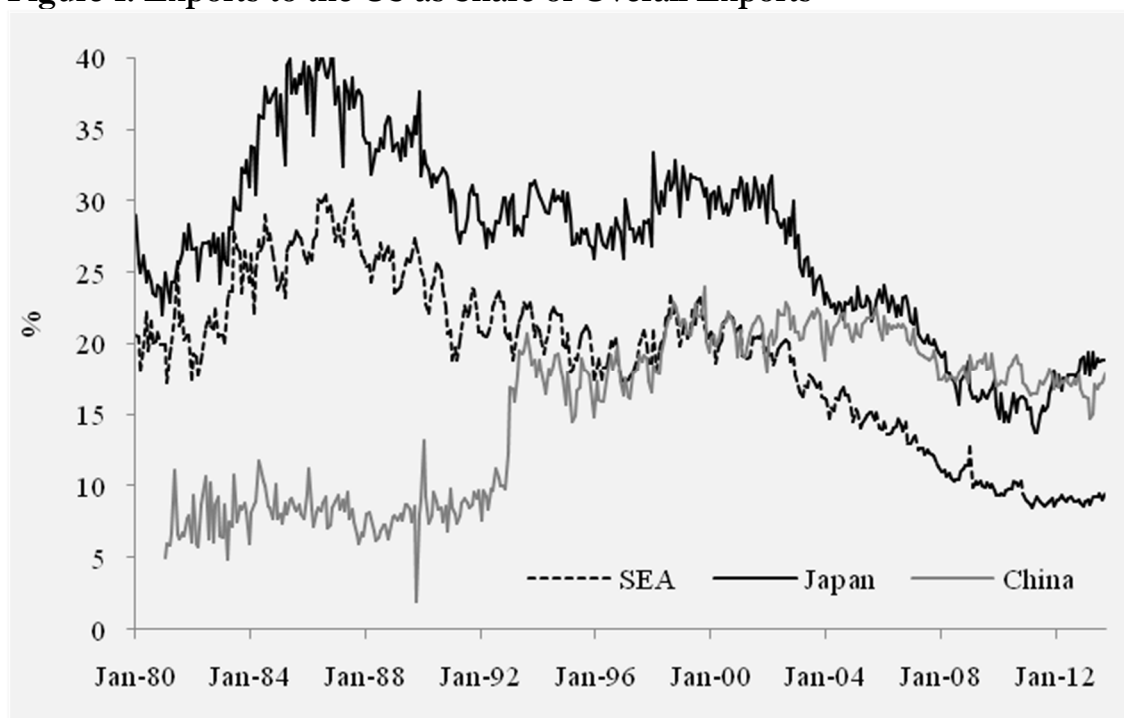
In the 1950s the export-driven economic catch-up process of Japan set in as the cornerstone for the rise of East Asia as an economic power house. It was followed by high growth of several generations of East Asian tiger countries. The most recent and most impressive catch-up path is followed by China. More than other emerging market economies the remarkable economic catch-up process of East Asia has been based on sound macroeconomic conditions, i.e. price stability, fiscal discipline, high saving rates, and – in particular – exchange rate stability against the US dollar (World Bank 1993; Balassa 1988; Page 1994).

2.1 Trade and Exchange Rate Stability

Given the large size of the US market relative to developing East Asia, the US constituted the most important target destination for East Asian exports. Due to the economic dominance of the US after World War II exports to the US were the focal point of Japan's economic catch-up process. During the early 1980s, after the liberalization

of Japan's international capital flows and the emergence of Japan's ever-lasting trade surplus, the share of Japan's exports to the US had grown to about 40% of overall exports (Figure 1). Up to the collapse of the Bretton-Woods-System in the early 1970s Japan's export-led catch-up process was supported by tight exchange rate stability versus the US dollar. Since then, the Japanese monetary authorities continued to soften the Japanese yen appreciation trend by foreign exchange intervention and interest rate cuts (Danne & Schnabl 2008).

Figure 1: Exports to the US as Share of Overall Exports



Note: SEA covers the arithmetic average of exports to the US of Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea and Thailand.

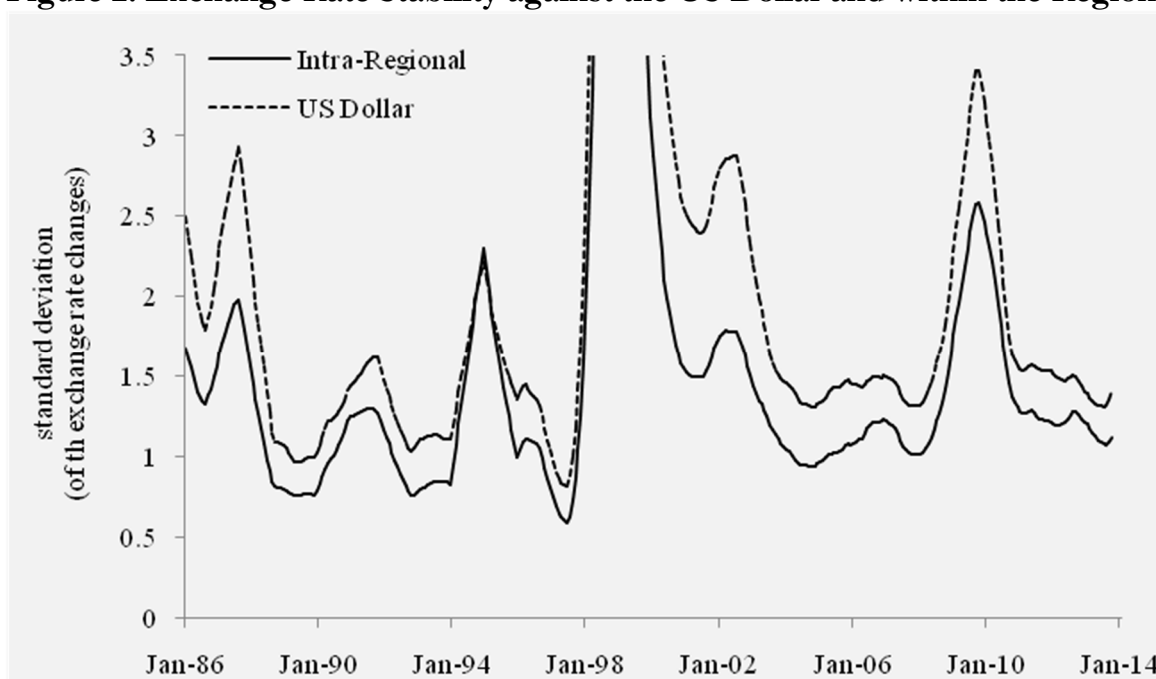
Source: IMF (DOTS), authors' calculations.

Also for the smaller East Asian economies the US constituted the most important export target destination. By the mid 1980s, the average share of the exports of the smaller East Asian economies to the US as share of overall exports was close to 30% (Figure 1). In contrast to Japan the smaller East Asian economies maintained hard or soft pegs to the US dollar to stabilize their export and macroeconomic performance (McKinnon 2005). After China had abolished foreign exchange controls on current-account transactions (exporting, importing, interest and dividends) and had unified the dual exchange rate in 1994, exports to the US became the backbone of China's outstanding growth performance (McKinnon & Schnabl 2012). Since the mid 1990s, the share of

exports to the US out of China's overall exports has remained widely constant at around 20%.

Beyond exports to the US East Asian trade integration has gained momentum (Ng 2003; Kawai 2005). The common US dollar peg of the East Asian countries – since 1994 including China, but excluding Japan – constituted the basis for a high degree of intra-regional exchange rate stability. As in the case of the European monetary integration process, intra-regional exchange rate stability favored intra-regional trade integration and growth. Figure 2 shows the close link between exchange rate stability against the US dollar and intra-regional exchange rate stability in East Asia.

Figure 2: Exchange Rate Stability against the US Dollar and within the Region



Note: Monthly gliding average of standard deviations of percent exchange rate changes against the US dollar (12 months rolling window) ($\sigma_{t_1}^{t_{12}} \overline{IR}$; $\overline{IR} = \frac{1}{10} \sum_{i=1}^{j=10} \Delta \frac{IR_i}{USD}$). The standard deviation within the region is the monthly gliding arithmetic average of the East Asian currencies' standard deviations of percent exchange rate changes against all other currencies of East Asian countries ($\sigma_{t_1}^{t_{12}} \overline{IR}$; $\overline{IR} = \frac{1}{10} \sum_{i=1}^{j=10} \Delta \frac{IR_i}{IR_j}$). (IR= Intra-Regional).

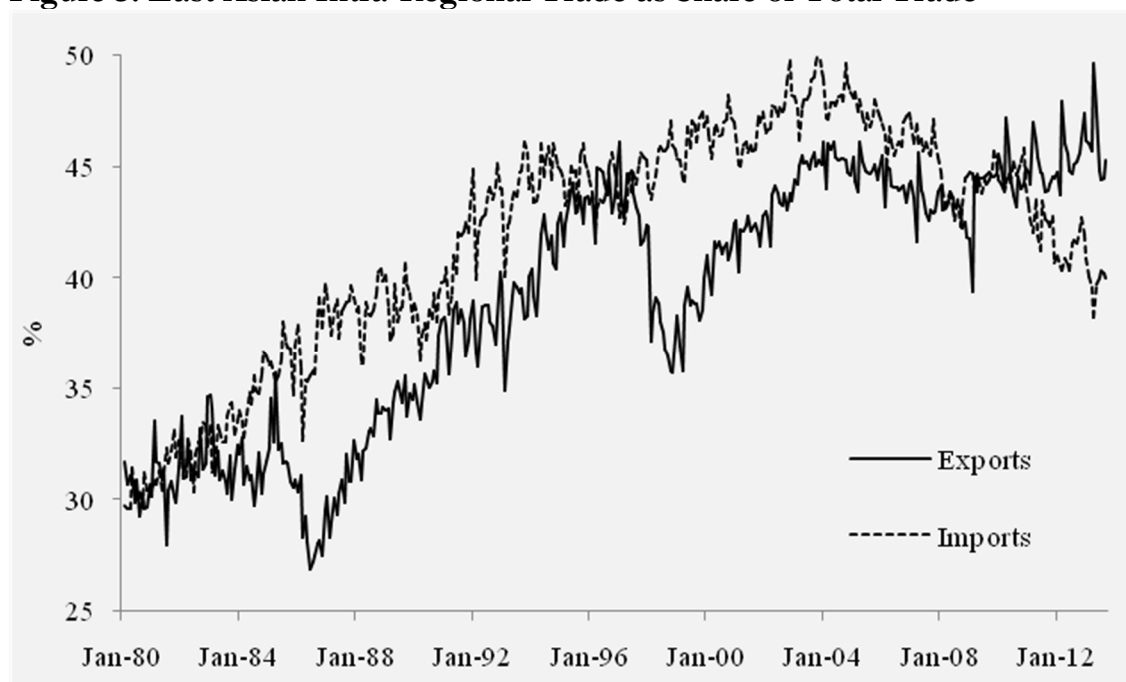
Source: Pacific Exchange Rate Service.

The upshot is, that the region is characterized by highly sophisticated vertical production chains as one of the world's most important assembling halls (Thorbecke & Smith 2010).² Japanese multi-national firms as the region's main supplier of the FDI have

² To promote intra-regional trade the APEC (Asia-Pacific Economic Cooperation), a trade and economic cooperation forum, and the AFTA (ASEAN Free Trade Agreement), a multilateral free trade area, were established in 1989 and 1992. The APEC aims to promote free trade, investment and growth by liberalization and

built up a wide-ranging network, which enhanced regional investment relations, trade interdependence, division of labor and vertical economic integration (Ng 2003; Gaulier 2007).³ Being natural trading partners⁴ the trade structure of the East Asian countries has increasingly become complementary⁵ (Ng 2003; Lee & Shin 2006).

Figure 3: East Asian Intra-Regional Trade as Share of Total Trade



Source: IMF (DOTS), authors' calculations.

As shown in Figure 3, the share of intra-regional trade out of overall trade in East Asia started to increase in the second half of the 1980s following the post-Plaza Japanese yen appreciation, which boosted Japanese FDI in its low-cost neighboring countries. Whereas by 1980 exports (imports) of the ten East Asian economies to (from) the other East Asian economies made up about 30% of overall exports (imports), these shares

cooperation. In contrast to the WTO the APEC has a voluntary and non-discriminating approach. Negotiations and conventions are not legally binding and liberalization measures are not limited to member states (Kawai & Urata 2010). The AFTA aims to reduce tariffs among member countries to 0–5%. The agreement was followed by numerous bilateral free trade agreements within the region as well as with non-ASEAN economies, also known as ‘noodle bowl’.

³ Economic integration is enhanced as FDI creates a linkage between the supplying and the receiving country. As outsourced subsidiaries purchase intermediate goods of the outsourcing country the producer of these goods is indirectly linked to the parent company abroad. In this way international trade and financial networks are created.

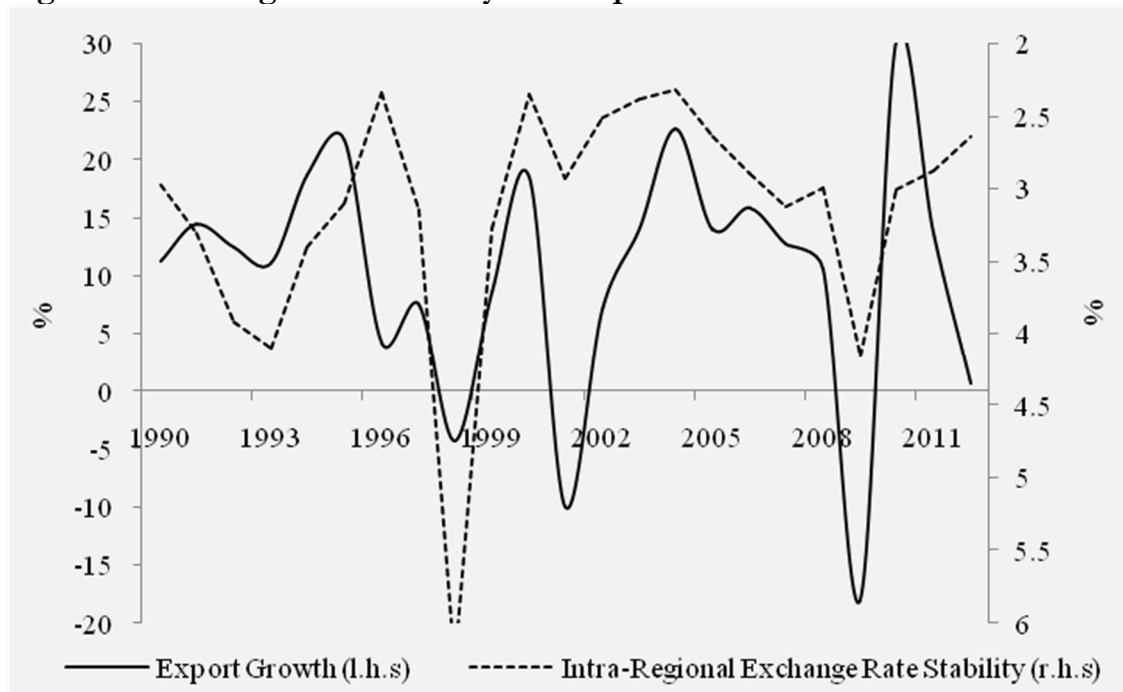
⁴ Transaction costs between economies with a land border, common language, cultural similarities, etc. tend to be lower than for economies which lack these factors.

⁵ More than half of the trade within the region is in parts and components (ADB 2010). For instance by 2012 the main partners of Thailand on the import side were Japan (18.5% of total imports) and China (13.4%). In terms of exports China (12%) ranked first and Japan (10.5%) third. Main trading products are industrial products and parts (Thai Ministry of Commerce, Foreign Trade Statistics of Thailand data for 2012).

had grown to 45% of overall exports and 40% of overall imports by 2012. Due to the high degree of intra-industry trade in intra-regional trade – with intermediate goods being more sensitive to exchange rate fluctuations than raw materials and finished goods as they cross borders several times before they reach their final destination – intra-regional trade strongly hinges on intra-regional exchange rate stability (Hayakawa & Kimura 2009; IMF 2011).

This implies a close link between exchange rate stability and export performance in East Asia as suggested by Figure 4. Exchange rate stability against the US dollar is approximated by yearly average standard deviations of a year's month-over-month percent exchange rate changes of ten East Asian currencies against the US dollar, with the scale being inverted. The export performance is measured by the (unweighted) average growth rate of US dollar exports compared to the previous year. Given – as shown in Figure 2 – the close link between exchange rate stability against the US dollar and intra-regional exchange rate stability as well as the close link between export growth and real growth, the crucial role of exchange rate stability for growth becomes evident.

Figure 4: Exchange Rate Stability and Export Performance in East Asia



Source: IMF, authors' calculations.

The growth of intra-regional trade as percent of overall-trade of the East Asian economies has been at the expense of trade with the US, which started to decline in relative terms since the mid 1980s in particular for Japan and the smaller East Asian economies

(see Figure 1). This may imply that exchange rate stability against the US dollar has lost importance for the growth performance of the region. From this point of view, East Asia would be able to follow the European countries, which delinked their currencies from the US dollar in the early 1970s and embarked on an independent monetary integration process.

2.2 Capital Flows and Exchange Rate Stability

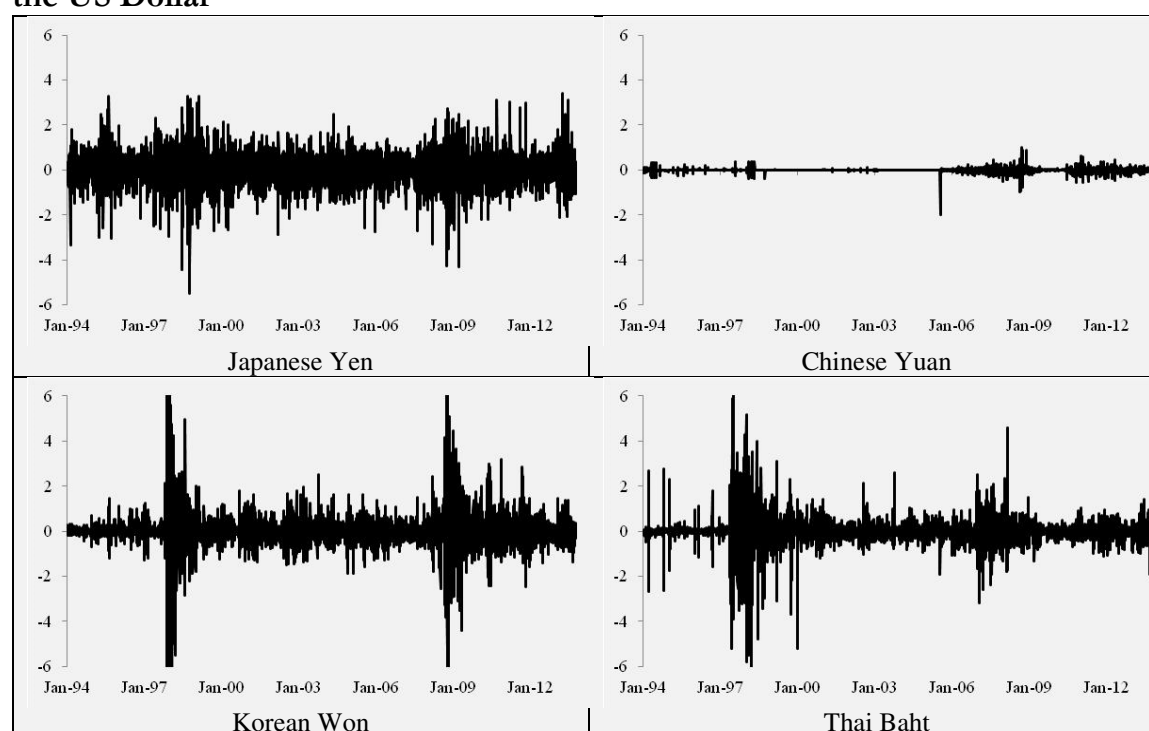
However, since the 1980s international capital flows have gained growing importance for global economic development and growth. As international and intra-regional capital flows in East Asia remain dominantly denominated in US dollars, exchange rates tend to remain pegged to the US dollar (McKinnon & Schnabl 2004). Pegging occurs both on high and low frequencies.

The rationale for high-frequency pegging – i.e. exchange rate stabilization on a day-to-day or intra-day basis – is due to underdeveloped capital markets in developing countries and emerging market economies (Eichengreen & Hausmann 1999). Given shaky financial histories and – in many cases – macroeconomic instability, markets for fixed-interest rate bonds are widely absent at the longer end of the yield curve. If bonds with mid-term maturities exist, the interest rates are usually tied to short-term maturities. An active forward market cannot develop, because potential market makers cannot cover forward transactions in domestic currency, as they cannot find a respective array of interest rate bearing domestic bonds at different maturities. Thus, in the absence of an efficient forward market in foreign exchange, risk-averse exporters and importers cannot hedge. Banks cannot easily cover open foreign exchange positions.

Therefore, to reduce the international payment risks for domestic banks and enterprises, governments stabilize the exchange rates at high frequencies as a second best solution. Figure 5 shows the degree of high frequency pegging of Japan, China, South Korea and Thailand measured as day-to-day percent changes of the respective exchange rate versus the US dollar. The latter three represent the East Asian economies with underdeveloped capital markets. Japan, where highly developed capital markets provide instruments to hedge foreign exchange risk, the currency is allowed to float free exhibiting a high degree of day-to-day exchange rate volatility. In contrast, high-frequency exchange rate volatility of the Chinese yuan, the Korean won and the Thai

baht versus the US dollar is low, reflecting tight exchange rate management on a day-to-day basis. For instance, China for a long time up to March 2014, maintained a narrow band of about 1 percent between bid and ask prices throughout the day to minimize international payment risks.

Figure 5: Daily Exchange Rate Volatility of Yen, Yuan, Won and Baht versus the US Dollar



Source: US Federal Reserve.

The capital market-based rationale for low-frequency pegging is linked to the currency mismatch of international liabilities or assets. Emerging markets with a high level of foreign currency denominated debt (such as the later crisis countries before the Asian financial crisis), aim to prevent major domestic currency depreciation, as this would inflate foreign debt in terms of domestic currency. Countries with large stocks of foreign currency denominated international assets fear appreciation, as the net worth of their asset positions in domestic currency would be eroded (McKinnon & Schnabl 2009).

Table 1 shows cumulated current account positions since 1980 as approximation for the net international investment positions of the East Asian countries (as a share of GDP). It reveals that by 2013 – without controlling for revaluations effects due to exchange rate changes and/or default – nine out of ten East Asian countries had positive net international investment positions. As these international assets are due to the

underdeveloped capital markets in East Asia predominantly denominated in foreign currency, an appreciation of the domestic currency causes substantial losses in terms of domestic currency. The resulting risks are particularly large in China and Japan⁶, as well as Hong Kong, Singapore, Malaysia and Taiwan. In particular if – as in the case of Japan – the international assets are held by domestic financial institutions, preventing appreciation becomes an issue of financial stability (Goyal & McKinnon 2003).⁷

Table 1: Net International Investment Positions in East Asia as % of GDP

	Jp	Jp ₂	Ch	Ch ₂	HK	Id	Ko	My	Ph	Si	Tw	Th
1980	-0.4		0.1		-2.7	3.7	-3.7	-0.9	-4.7	-6.7	-2.0	-2.6
1985	3.6		0.8		3.9	-13.8	-6.7	-29.4	-14.6	-15.8	41.4	-11.1
1990	12.1		-0.1		24.1	-18.6	5.4	-14.8	-15.5	6.1	100.5	-14.1
1995	24.7		1.8		20.5	-21.7	0.2	-35.6	-28.0	58.0	96.2	-27.0
2000	35.6		9.1		23.5	-18.0	7.6	-10.6	-37.8	117.1	122.0	-14.8
2005	48.3	33.4	18.9	18.3	60.2	-3.9	15.9	36.2	-28.4	165.4	159.2	-9.8
2010	66.7	67.6	49.8	44.0	98.9	5.7	23.1	115.3	3.8	238.8	215.4	3.7
2012	69.9	72.9	51.5	38.4	101.0	-0.2	28.3	129.6	13.3	283.4	242.7	5.3
2013	70.1		52.7		100.4	-7.1	30.6	133.2	16.9	297.1	258.1	6.1

Note: Approximation by accumulated current account balances since 1980. Jp₂ and Ch₂ as reported by the IMF. Source: IMF (IFS).

3 Stabilizing and Destabilizing Effects of (Potential) Anchor Currencies

Given the opposed trends in goods and financial markets with respect to the potential of single currencies to gain anchor currency status in East Asia, exchange rate policies are at the crossroads. Linked to China's high growth performance and intensive intra-regional trade an independent monetary integration process based on a regional anchor currency seems the optimal solution. This would enable East Asia to delink from US monetary policy, which has remained far too loose for the high-growth East Asian

⁶ China and Japan are the major holders of US treasury securities (US Treasury, <http://www.treasury.gov/resource-center/data-chart-center/tic/Documents/mfh.txt>).

⁷ The gap between the net international investment position approximated by accumulated current account balances (as a proxy for net capital exports) and the officially reported numbers of net international assets can be understood as a proxy for the losses on net international assets by default. In Table 1 this would indicate that about a quarter of China's international assets has been devalued.

economies (except Japan). However, the US low interest rate policies and quantitative easing since the turn of the millennium have not only destabilized the East Asian economies, but have also – paradoxically – strengthened the role of the US dollar in the international monetary system (Prasad 2014).

3.1 Destabilizing Effects Originating in US Monetary Expansion

Since the turn of the millennium, starting from 2001 in response to the bursting dotcom bubble and since 2007 in response to the subprime crisis, asymmetric interest rate cuts and quantitative easing have brought US interest rates towards zero and inflated the Federal Reserve Bank's balance sheet (Taylor 2013). The benign US liquidity conditions have led to persistent appreciation pressure on the East Asian currencies and – widely independent from the exchange rate regime – to the accumulation of large stocks of foreign reserves beyond appropriate war chests against potential currency crisis (Park & Estrada 2009).

In countries with tight US dollar pegs such as Hong Kong the expansionary US monetary policy has led to an extreme monetary expansion including interest convergence towards zero and the inflation of the balance sheet of the Hong Kong Monetary Authority. In countries with more flexible exchange rate arrangements such as Malaysia, South Korea, Thailand and even China the appreciation of the domestic currencies has been accompanied by unprecedented foreign reserve accumulation despite appreciation of their currencies.⁸ In Japan, where foreign exchange intervention against appreciation was mainly terminated by the turn of the millennium monetary policy mainly tended to follow US monetary policy to cushion appreciation pressure (Goyal & McKinnon 2003). Thus, independent from the exchange rate regime, monetary policy independence has become very limited at the periphery of the world monetary system including East Asia, unless capital controls are introduced.

Excessive foreign reserve accumulation as observed in all East Asian countries (except Japan) has different destabilizing effects depending on the monetary policy response (Löffler et al. 2013). If foreign reserve accumulation on the asset side of the central

⁸ Note that expected appreciation can be the origin for one-way-bets on the appreciation of the respective currency can attract additional speculative capital inflows (McKinnon & Schnabl 2009).

bank balance sheet remains unsterilized, the respective increase of reserves of commercial banks on the liability side of the central bank balance can be the basis for accelerating credit growth. Rising consumer price inflation, asset price bubbles, growing current account deficits and rising foreign-currency denominated international debt path the way towards third generation-type currency crisis as experienced by the South East Asian countries (Indonesia, Malaysia, the Philippines, South Korea and Thailand) in the wake of the Asian financial crisis (Corsetti et al. 1999).

To forestall such crises in the future, post-crisis most East Asian countries have sterilized the monetary effects of foreign reserve accumulation (Hoffmann & Schnabl 2014). There are two types of sterilization strategies. Market-based sterilization, as for instance pursued in South Korea, absorbs the liquidity originating in central bank foreign currency purchases by open-market operations at market interest rates, for instance by selling central bank bonds. The downside is, that such operations drive up interest rates, what – in particular in a low-interest rate environment in large industrialized countries – attracts new capital inflows. Even more reserves are accumulated and new sterilization become necessary.

Alternatively, non- (or low) remunerated reserve requirements or coercive sales of bonds with low interest rates can absorb liquidity. Such non-market based sterilization instruments are usually combined with capital and interest rate controls. The downside is that domestic interest rate structures are distorted, possibly accompanied by misallocation of domestic credit via a state-controlled banking sector. This is in particular the case in China (McKinnon & Schnabl 2014).

Since the turn of the millennium, both market-based and non-market-based sterilization operations have contributed to a monetary tightening in most East Asian economies in the sense that the monetary policy stances have been less expansionary than the monetary stance of the US. The combination of stabilization of the nominal exchange rate and the domestic price levels (extending to wage levels) is equivalent to real exchange rate stabilization. This has contributed to current account surpluses versus the US and rising foreign currency denominated international assets as shown in Table 1. Whereas real exchange rate stabilization has helped the East Asian countries to mediate pre-Asian financial crisis-type overinvestment cycles, the risk comes, in particular in China, from distorted capital allocation.

As non-market-based sterilization measures keep – together with interest rate and capital controls – credit demand high, the Chinese government-controlled banking sector is in the position to allocate capital to selected enterprises. In China, in particular state-owned and export enterprises, that constitute an important source of employment, have profited from preferential credit allocation (Girma et al. 2009). Small and medium enterprises often have to rely on financing by a fast growing shadow banking sector that offers to savers more attractive conditions than state-controlled banks, which have to keep deposit rates low to compensate for the costs of non-market-based sterilization. The resulting distortions (including speculative movements in real estate prices) have led to concerns about the stability of the Chinese financial sector.

3.2 The Destabilizing Role of Japan and the Japanese Yen

Given the instabilities for the East Asian countries originating in the US monetary policy Hayakawa and Kimura (2009) as well as Shirono (2009) propose to safeguard East Asian intra-regional exchange rate stability by pegging to an internal anchor currency. As international currencies have to be backed by highly developed capital markets (as transaction costs are low and risk diversification is easy), the Japanese yen can be regarded as the first candidate for a regional anchor currency in East Asia. Whereas in terms of nominal GDP high-growth China has already outrun Japan, the market-capitalization of Tokyo financial markets still outperforms its competitors in Hong Kong, Shanghai and Singapore.

Yet, Japan has increasingly played a destabilizing role in East Asia. With the currencies of the smaller East Asian countries and China being pegged more or less tightly to the US dollar the freely floating Japanese yen caused rapid intra-regional changes of competitiveness both between Japan and the other East Asian economies as well as in third markets such as US and Europe. This effect can be assumed to be particularly strong for countries such as Taiwan, South Korea and increasingly China, whose enterprises compete in similar market segments with than for China as a large, comparatively closed economy.

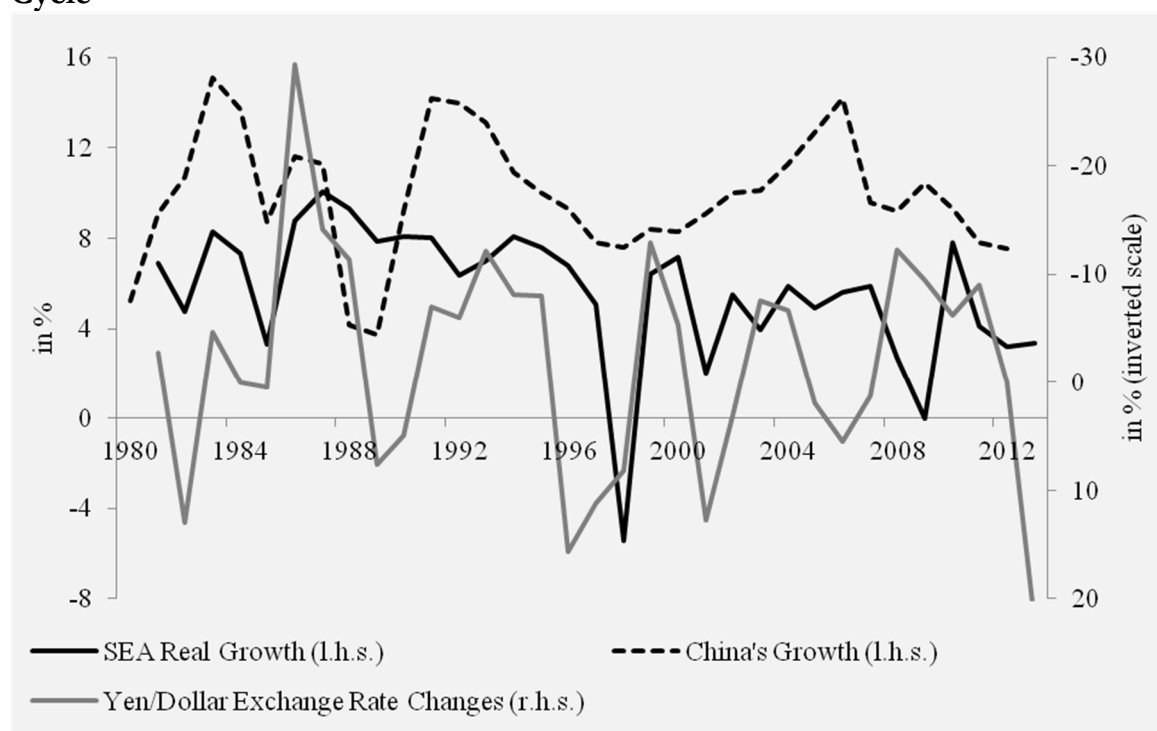
Also from a financial market perspective, the fluctuations of the Japanese yen against the US dollar had an impact on the business cycles of Japan's East Asian neighboring countries (Mundell 2003). During Japanese yen appreciation phases Japanese export

enterprises were forced into dire restructuring processes that triggered a rise in FDI flows from Japan to its neighboring countries. The influx of Japanese capital boosted growth in the target regions. In periods of Japanese yen depreciation, slowing FDI inflows from Japan constituted an additional source of economic instability in the region.

In addition, starting in the 1990s, carry trades and bank credits originating in Japan, contributed to the amplification of business cycles in East Asia. The harsh appreciation of the Japanese yen after the Plaza Agreement triggered a strong monetary expansion which was followed by a speculative bubble on Japanese stock and real estate markets (Ravankar & Yoshino 2008). The bursting of the bubble in late 1989 became the starting point of a lasting stagnation. As a response the Bank of Japan gradually cut interest rates towards zero and pursued expansionary unconventional monetary policies.

This encouraged carry trades from Japan to its East Asian neighboring countries including China. In the first half of the 1990s Japanese portfolio outflows (combined with Japanese yen appreciation) boosted growth of the smaller East Asian economies (World Bank 1993) on the back of undue credit growth, overinvestment and asset price bubbles. When since 1995 the Japanese yen started to depreciate, Japanese growth picked up and carry trades to East Asia slowed down. This initiated the economic turnaround, which finally cumulated into the 1997/98 Asian financial crisis. The Asian financial crisis triggered the Japanese financial crisis as Japanese exports to the region slowed down, the returns of Japanese FDI in the region decreased and a new bad loan problem for the ailing Japanese banking sector emerged. The Japanese crisis and the strong depreciation of the Japanese yen in the wake of the Japanese financial crisis further aggravated the crisis in the smaller East Asian crisis countries.

The upshot is that, the overall role of Japan for its neighboring countries has to be regarded as destabilizing. Figure 6 shows the average growth rate of the smaller East Asian economies and China and the yearly percent changes of the Japanese yen against the US dollar. In contrast to China, the smaller East Asian economies are more vulnerable to Japanese yen/US dollar exchange rate fluctuations, as they are more open. It stands out, that the business cycle of the smaller East Asian economies is strongly linked to the fluctuations of the Japanese yen against the US dollar.

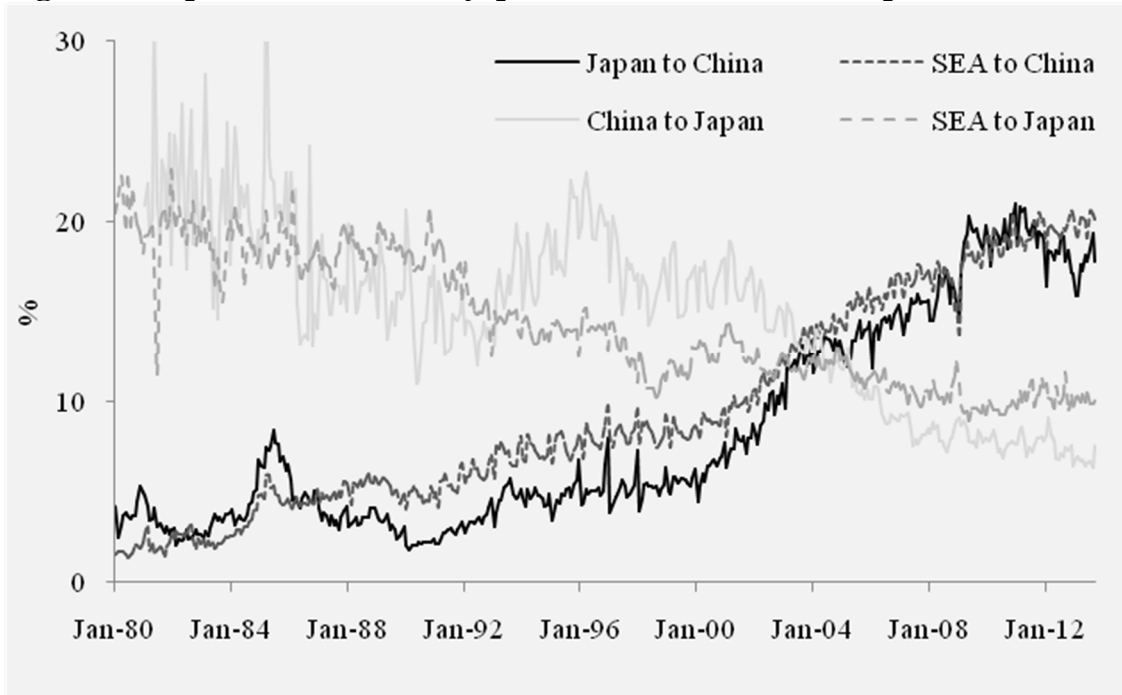
Figure 6: Japanese Yen/US Dollar Exchange Rate Swings and SEA Business Cycle

Note: Japanese yen/US dollar exchange rate swings as percent exchange rate changes of the Japanese yen against the US dollar versus the previous year. Positive numbers indicate depreciation of the Japanese yen against the US dollar. SEA real growth rate as arithmetic average of the smaller East Asian economies.

Source: Oxford Economics and Pacific Exchange Rate Service.

Given two destabilizing moments of Japan in East Asia – the destabilizing effect of Japanese yen/US dollar exchange rate fluctuations and Japan's economic stagnation – the role of Japan as a trading partner of the other East Asian economies has gradually declined. Whereas by 1980s 20% of Chinese exports and in average 20% of the exports of the smaller East Asian countries were shipped to Japan, by 2013 this share had declined to (less than) 10% (Figure 7). Thus, from a trade perspective, linked to high exchange rate volatility of the Japanese yen against the US dollar and the other East Asian currencies, a trade disintegration of Japan from East Asia can be observed. The diminishing role as leading trading power is a major reason why the Japanese government's attempts to promote the Japanese yen's role as leading international currency in East Asia have failed (Eichengreen & Kawai 2014).⁹

⁹ The government's measures aimed at reducing exchange rate risks for the Japanese trading sector and increasing competitiveness of financial institutions. It was argued that the internationalization of the Japanese yen was beneficial for East Asia as reduced exchange rate volatility against the Japanese yen would stabilize trade and currency risks of the foreign reserve holdings could be diversified.

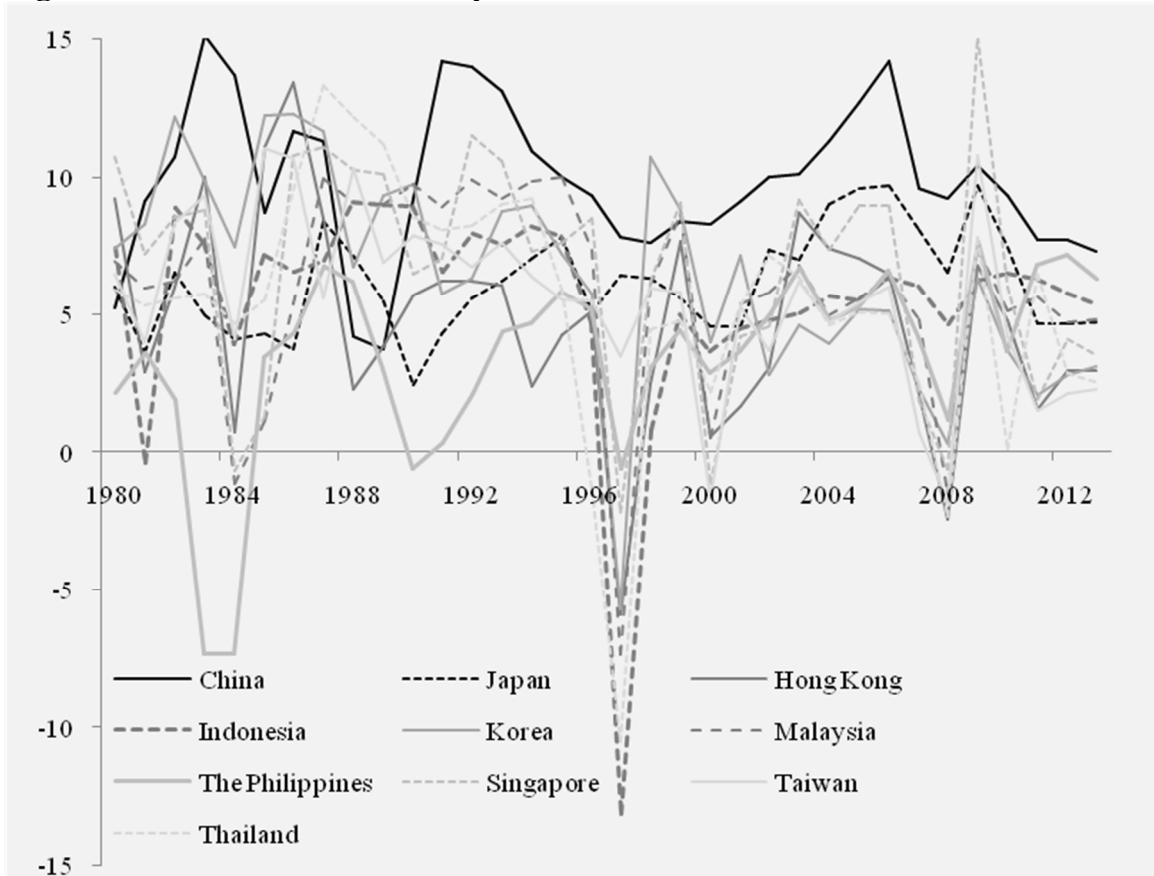
Figure 7: Exports to China and Japan as Share of Overall Exports

Note: SEA trade as unweighted average.
Source: IMF (DOTS).

3.3 The Stabilizing Role of the Chinese Yuan and its Conflicted Emergence as an International Currency

In contrast to Japan since the 1990s, China provided via its tight dollar peg and outstanding growth dynamics stability to the region. With the introduction of the tight US dollar peg in 1994 inflation declined to historically low levels and the growth rates stabilized (Ng 2003; McKinnon & Schnabl 2012). By ensuring high and stable growth in China the Chinese US dollar peg also contributed to a high and more stable growth of East Asia as a whole. As shown in Figure 8 with real growth rates between 7 to 10% since the mid 1990s, China has become the hub of East Asian growth dynamics, with growth being transmitted via the East Asian production network. In crisis periods (1997/98 Asian financial crisis, 2001 dotcom crisis, 2007/08 subprime crisis) China stabilized the region by resisting depreciation and by running Keynesian spending programs (McKinnon & Schnabl 2009).

Figure 8: East Asian Business Cycles



Source: IMF (IFS).

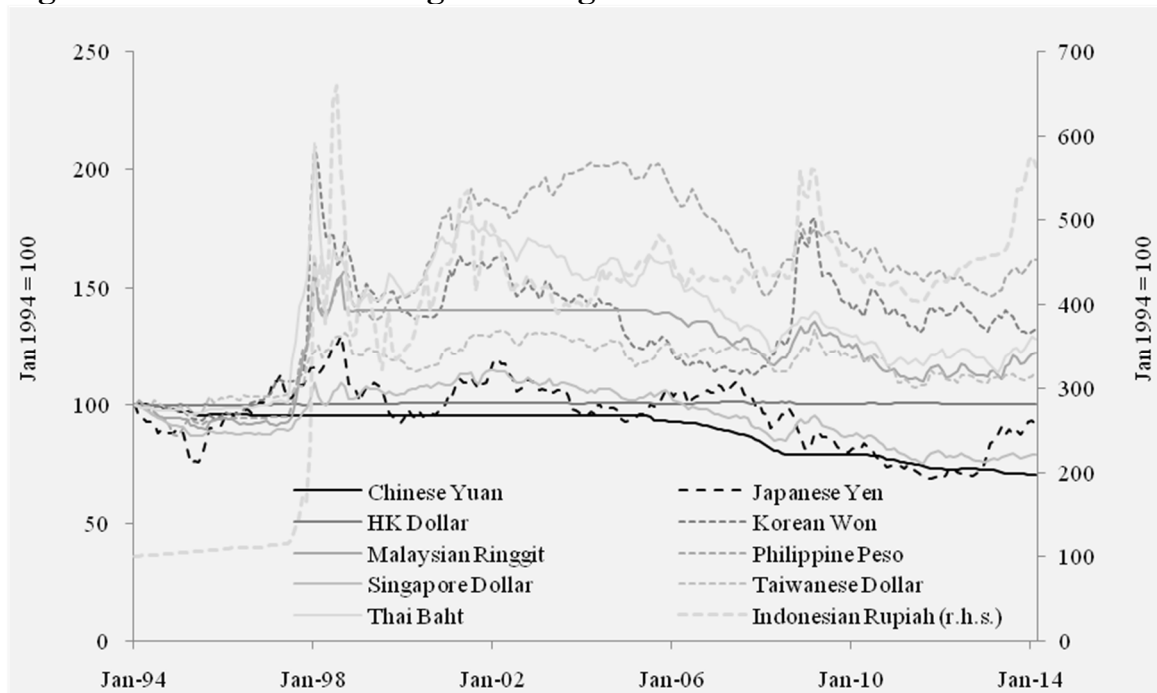
Stability and growth favor trade. Figure 7 shows that exports from Japan to China as share of overall Japanese exports increased from about 5% in 1995 to about 20% by 2013. The development has been by and large similar in the smaller East Asian economies. It stands out that the relative increase of China as a trading partner of the smaller East Asian economies is matched by a respective relative decline of Japan.

The relative change in trade patterns has led to a changing exchange rate stabilization pattern in East Asia. On one side, the dollarization of international capital flows and international assets in East Asia constitute an incentive to keep exchange rates pegged to the US dollar, both at high and low frequencies. On the other side, the growing role of China as a hub of industrial production has favored at a low-frequency level tighter exchange rate stability versus the Chinese yuan.

The result is a two-currency stabilization process: First, China as the core country of East Asian growth dynamics determines its exchange rate versus the US dollar. As shown in Figure 9, due to expansionary US monetary policy and US pressure to let the Chinese yuan appreciate, China has moved since 2005 – with the major exception of

the US subprime crisis – on a gradual, controlled appreciation path. The smaller East Asian economies kept stabilizing their exchange rates at high frequencies to the US dollar, whereas at lower frequencies they followed the appreciation path of the Chinese yuan versus the US dollar.¹⁰ Up to the emergence of Abenomics in the 2013, also the Japanese yen seems to have followed the upward crawling peg of the Chinese yuan. Since 1994 – when China pegged its exchange rate to the US dollar – all East Asian countries including Japan have kept their exchange rate on the depreciation side versus the Chinese yuan. This provided an additional growth impulse to their economies. Thus, implicitly, the exchange rate strategies of the smaller East Asian countries and Japan can be understood as – cautious – beggar-thy-neighbor policies, which so far could be easily absorbed by high-growth China. Strong depreciations against the US dollar and the Chinese yuan in times of crisis can be understood as an important stabilizing moment for East Asian crisis countries at the expense of China.

Figure 9: East Asian Exchange Rates against the US Dollar



Source: IMF (IFS).

With China providing the common good of exchange rate stability and growth momentum to the region, the Chinese yuan seems to be the natural candidate for an anchor currency for the region. In this spirit, China has aimed to promote the internationalization of the Chinese yuan as a prerequisite to become an international currency.

¹⁰ This helped stabilizing prices of intermediate products within the East Asian production network (García-Herrero & Koivu 2009).

With the issue ranking high on the political agenda, a broad network of yuan trade settlement agreements, offshore banking, bond issuance and bilateral currency swaps has been established (Eichengreen & Kawai 2014).

Indeed, Balasubramaniam et al. (2011) find that the Malaysian ringgit and the Taiwanese dollar are particularly sensitive to changes in the Chinese yuan exchange rate against the US dollar. Henning (2012) argues that the Malaysian ringgit, Thai baht, Singapore dollar, Philippine peso and recently the Korean won form a “renminbi bloc”. Subramanian and Kessler (2012) identify most East Asian currencies to have closer co-movements with the yuan than with the US dollar. Increasing regional trade integration and the Chinese yuan internationalization process can be seen as a motivation to intensify this trend (Ito 2010; Chinn & Ito 2013; Eichengreen & Kawai 2014).

Nevertheless, despite the growing role of the Chinese yuan as an international currency, it is still of marginal significance.¹¹ Even more, due to the very benign liquidity conditions in US, the emergence of the Chinese yuan as (regional) international currency is conflicted (McKinnon & Schnabl 2014). Short-term interest rates close to zero and quantitative easing in the US together with persistent appreciation expectations established by US dollar-denominated assets and by the upward-crawling peg constitute the main determinants of large speculative capital inflows, (which circumvent public capital controls). The influx of large amounts of hot money forces the Peoples Bank of China into non-market-based sterilization measures via low-remunerated reserve requirements which are linked to an inevitable fragmentation of Chinese financial markets (see section 3.1).

If China would open the capital account and fully liberalize domestic capital markets as a prerequisite for the Chinese yuan to become an international currency (and thereby to become an anchor currency for the East Asian monetary integration process), China would be swamped with capital inflows. The interest rate would be driven towards the US interest rate, i.e. to zero. With China’s high GDP growth and possibly excessive investment, its natural interest rate is much higher than in the low-growth mature industrial economies. The upshot is, that if restraints on foreign financial inflows would be weakened, the likelihood and size of bubbles in real estate markets and overinvestment in the export sector would increase. China would risk, as Japan in the second half

¹¹ In 2009 0.02% of Chinese trade was settled in yuan. In 2012 it grew to 14% (Chinn & Ito 2013).

of the 1980s, a giant bubble, of which the bursting would lead into a lasting recession. For this reason, as long as US liquidity conditions remain benign, the path of the Chinese yuan towards an international currency and a regional anchor currency is blocked.

4 Empirical Evidence on Exchange Rate Stability and Growth

To make an empirical assessment concerning the growth effects of different exchange rate strategies in East Asia we embark on an empirical investigation. The literature on exchange rate stability and growth is wide and provides mixed results depending on the country-sample and the observation period.¹² For East Asia the evidence seems to be in favor of exchange rate stability. An OLS regression based on a gravity framework by Myint Moe et al. (2010) finds evidence that exchange rate stability promotes growth. Schnabl (2010) identifies a clearly positive impact of exchange rate stability against the US dollar for growth in East Asia. Whereas previous empirical investigations have mainly focused on the effects of exchange rate stability against the US dollar on growth in the region, we extend the literature by including the growth effects of exchange rate stability against Japanese yen and Chinese yuan. This aims to contribute to an assessment of the viability of alternative exchange rate targets, in particular versus Japanese yen and Chinese yuan.

4.1 Data and Model

We use panel data for 10 East Asian countries (as listed above) on quarterly basis from Q1 1990 to Q3 2013. Data sources are the International Monetary Fund International Financial Statistics and Oxford Economics. Following Ghosh et al. (2003) and Kočenda et al. (2012) de facto volatility measures are used as de jure volatility measures tend to diverge from de facto exchange rate policies (Calvo & Reinhart 2002).

To capture the role of high-frequency pegging against the US dollar, we compute the standard deviations σ of month-over-month percentage exchange rate changes of the national currencies against the US dollar on a quarterly basis. To capture low-frequency pegging, we add the arithmetic average μ of month-over-month exchange rate changes

¹² See Auboin and Ruta (2011) for a comprehensive literature review.

on a quarterly basis.¹³ As proposed by Ghosh et al. (2003) both measures are combined to the z-score ($z = \sqrt{\mu^2 + \sigma^2}$) as a third volatility measure.

As shown above exchange rate fluctuations against Japanese yen and Chinese yuan have been more a matter of competitiveness rather than of hedging in financial markets and transaction costs of trade. To capture the role of low frequency exchange rate fluctuations versus the Japanese yen and the Chinese yuan, we calculate the percent changes of exchange rate levels of the national currencies versus the Japanese yen and the Chinese yuan compared to the quarter of the previous year.

In particular since the turn of the millennium capital inflows have become a major determinant of growth in emerging market economies. Following Schnabl (2009) we control for the positive and negative growth effects of these capital inflows by using the nominal short-term interest rate as a proxy for the positive impact of capital inflows on growth. Year-over-year quarterly inflation rates are used as proxies for the negative impact of capital inflows on growth. As exports constitute in East Asia the crucial transmission channel of exchange rate stability on growth, year-over-year percent changes in US dollar exports are used as an additional control variable. Finally, to control for outlier effects in times of crisis – when exchange rate volatility tends to increase and growth tends to decline – we introduce crisis dummies.¹⁴

To estimate the influence of exchange rate volatility on growth we apply a generalized least squares model (GLS). The GLS model with fixed effects¹⁵ controls for time-invariant unobserved heterogeneity in the panel, which is allowed to be correlated with the explanatory variables (Wooldridge 2010):

$$y_{it} = \alpha_i + \beta m_{it} + \gamma c_{it} + u_{it} \quad (1)$$

¹³ We estimate a rolling window over the entire period to generate monthly averages and the standard deviations, which are converted into quarterly data.

¹⁴ The crisis dummy takes the value of one if a country's real growth is negative in two consecutive quarters (e.g. Claessens & Kose 2009).

¹⁵ We use a fixed effects model as the Hausman specification test rejects the null hypothesis (no systematic difference in the coefficients of the random and fixed effects models) and thus the random effects model is rejected.

In equation (1) the real growth rate y_{it} of country i at time t is assumed to depend on an unknown individual intercept α_i , the coefficient β of the volatility measure m (standard deviation of exchange rate fluctuation against the US dollar (σ), arithmetic average of exchange rate fluctuations against the US dollar (μ), z-score with respect to the exchange rate fluctuations against the US dollar (z), percent exchange rate changes against the Japanese yen, percent exchange rate changes against the Chinese yuan), the coefficient matrix γ of the vector the control variables c_{it} (short-term interest rates, inflation, export growth) and the error term u_{it} . The model is estimated with heteroskedasticity robust standard errors and within transformation.

4.2 Estimation Results

The estimation results for the GLS estimation for quarterly data are shown in Table 2. They show that exchange rate volatility against the US dollar has a statistically significant negative impact on growth. All three volatility measures versus US dollar have a negative sign and are statistically significant at the common levels of significance. Exchange rate fluctuations versus the Japanese yen have a clear impact on growth in East Asia. The positive sign of the coefficient implies that depreciations against the Japanese yen have a positive growth effect in East Asia, appreciations against the Japanese yen have a negative growth effect. This implies that the recent depreciation of the Japanese yen in the context of the Abenomics has slowed down growth in the region. The exchange rate fluctuations of the East Asian currencies against the Japanese yen are statistically significant in the same period and become insignificant at the common levels with a one-period lag.

In contrast, the exchange rate fluctuations versus the Chinese yuan turn out to be statistically insignificant at the common levels and have changing signs dependent on the time dimension (lags). This may be due to the fact that because of the tight exchange rate peg of the Chinese yuan against the US dollar and the low-frequency pegging of the smaller East Asian currencies against the Chinese yuan the variations of exchange rate changes versus the Chinese yuan are small. In addition, growth enhancing effects of exchange rate stability against the Chinese yuan are mostly captured by the volatility measures against the US dollar.

Short-term interest rates have the expected negative sign (lower interest rates stimulate growth) but are insignificant at the common levels. The same applies for inflation with standard deviations and z-score being used as volatility measures (higher inflation is linked to lower growth). The crucial role of exports for growth in East Asia is confirmed with exports having a clearly positive impact on growth with the coefficients being statistically significant at the common levels. The crisis dummy is clearly negative and highly statistically significant as well. R-square values between 0.58 and 0.60 indicate a good fit of the model, with the cross-section dimension having a better fit compared to the time dimension.

Table 2: GLS Estimation Results: Growth Effects of Exchange Rate Volatility

Fixed effects models - quarterly - old data

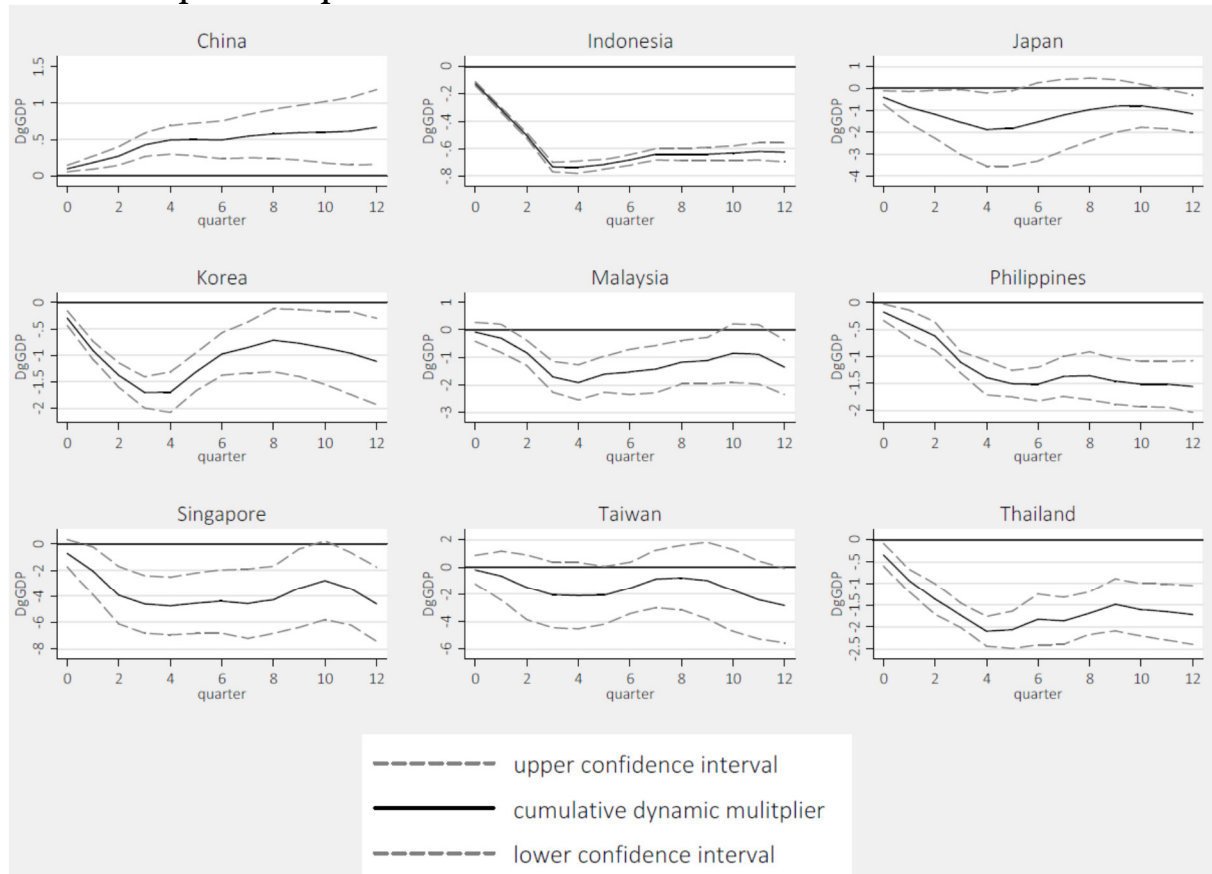
	(1)	(2)	(3)	(4)	(5)	(6)
Sigma	-0.432*** (0.0900)	-0.375** (0.0979)				
Average			-0.526** (0.134)	-0.373* (0.147)		
Z-score					-0.411*** (0.0833)	-0.354** (0.0907)
Yen	0.0363** (0.0104)		0.0249* (0.0108)		0.0375** (0.0109)	
L. Yen	0.0118 (0.0108)		0.0153 (0.0165)		0.0152 (0.0113)	
RMB		0.0118 (0.0142)		0.000541 (0.0125)		0.0127 (0.0146)
L. RMB		-0.0127 (0.0109)		-0.0111 (0.0124)		-0.00906 (0.0115)
Interest Rate	-0.0271 (0.0813)	-0.0289 (0.0827)	-0.0360 (0.0783)	-0.0390 (0.0797)	-0.0265 (0.0803)	-0.0289 (0.0819)
CPI	0.0233 (0.0386)	0.0101 (0.0380)	-0.0506 (0.0534)	-0.0662 (0.0543)	0.0261 (0.0399)	0.0117 (0.0385)
Exp	0.0801** (0.0212)	0.0818** (0.0213)	0.0774** (0.0203)	0.0806** (0.0210)	0.0801** (0.0212)	0.0821** (0.0214)
Crisis	-6.183** (1.297)	-6.134*** (1.274)	-6.722*** (1.264)	-6.669*** (1.259)	-6.157** (1.296)	-6.114** (1.279)
Constant	5.465*** (0.360)	5.445*** (0.367)	5.191*** (0.381)	5.238*** (0.378)	5.462*** (0.360)	5.443*** (0.367)
Observations	869	869	869	869	869	869
Adjusted R-squared	0.604	0.600	0.582	0.579	0.604	0.599
r2_w	0.607	0.603	0.585	0.583	0.608	0.603
r2_b	0.742	0.753	0.830	0.824	0.741	0.753

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

To capture the long-run development of growth in response to exchange rate volatility we compute - based on the GLS specification - impulse response functions for each economy. Table 3 shows the cumulative dynamic multiplier of the growth response to an one-standard deviation exchange rate volatility shock. We use the z-score as volatility measure because it combines the volatility captured by the standard deviations σ and the arithmetic average μ of month-over-month exchange rate changes. All economies but China have a similar response pattern. An increase in the exchange rate volatility

against the US dollar leads to decreasing growth. For all economies but Taiwan and Japan up to the fifth quarter this effect is statistically significant. For China it seems that a volatility shock of the Chinese yuan/ US dollar exchange rate has positive effects on growth although on a comparatively small scale. If standard deviation and arithmetic average are used as volatility measures this yields by and large the same results.

Table 3: Impulse Response Functions for the Z-Score



Note: Hong Kong is excluded as its hard peg the US dollar implies zero exchange rate volatility.

The take away from the estimations is that economic growth in East Asia is negatively influenced by exchange rate volatility. Furthermore the GLS model shows that an appreciation (depreciation) against the Japanese yen is associated with rising (declining) growth in East Asia. This is in line with our argument that the informal dollar standard with its low intra-regional exchange rate volatility promotes growth and economic integration in the region and that higher exchange rate fluctuations (as against the Japanese yen) are destabilizing. The current expansive Japanese monetary policy and the associated Japanese yen depreciation is likely to hamper economic growth of its East Asian neighbors possibly including China, where growth slows down.

As the GLS fixed effects model does not control for possible endogeneity bias, we applied an Arellano-Bond dynamic panel GMM estimator as robustness test. However the results are instable, hardly significant at the common levels and strongly depended on the time period, instruments and data frequency (quarterly or yearly). Therefore, the overall results for the impact of the exchange rate in East Asia have to be considered as mixed.

5 Outlook: The Emergence of Beggar-thy-Neighbor in East Asia?

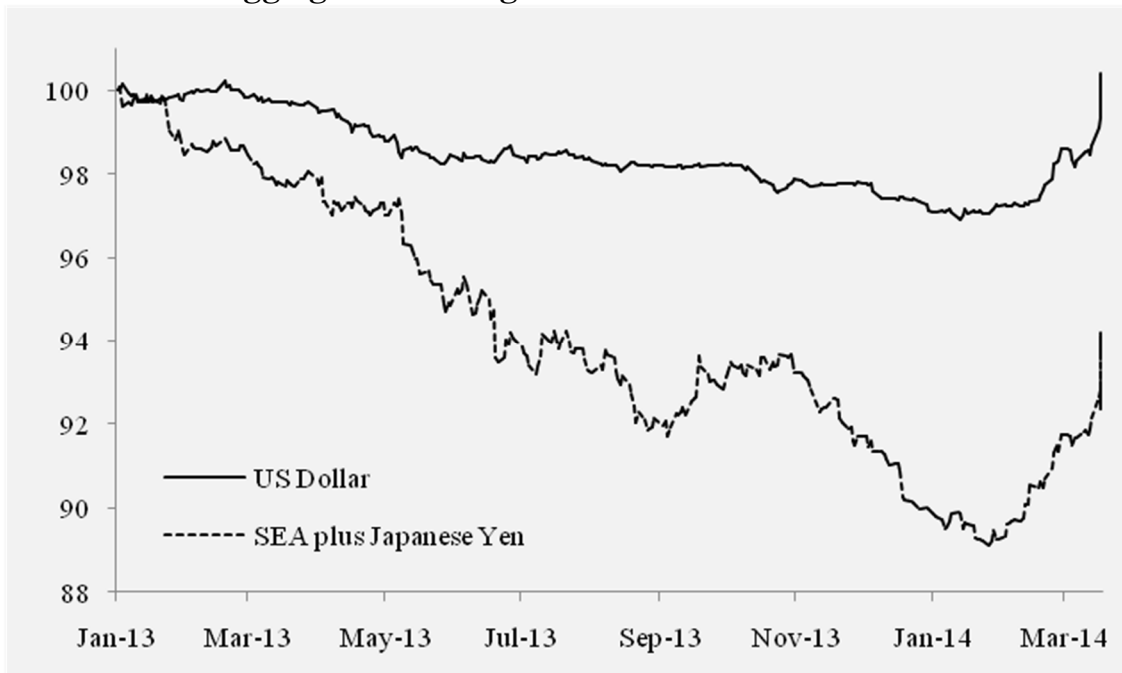
The East Asian monetary integration process is at the crossroads. Growing monetary and economic instability arising from the US dollar as the traditional and prevalent anchor of the East Asian monetary and economic integration process has made an independent East Asian monetary integration process more than ever pressing. However, East Asia is conflicted in providing a stable regional anchor currency for an independent East Asian monetary integration process as it was provided in Europe by the German mark since the collapse of the Bretton Woods System in the early 1970s.

The Japanese yen has failed to become the leading international currency in East Asia because monetary policy making in Japan remained despite exchange rate flexibility against the US dollar since the 1970s dependent on US monetary policy making. The fluctuations of the Japanese yen against the US dollar have been the origin economic instability in Japan and its neighboring countries, what has gradually eroded the role of Japan as a growth locomotive in East Asia. This has undermined the potential of the Japanese yen to become the anchor of an independent East Asian monetary integration process.

The (potential) lead of China and the Chinese yuan in the East Asian monetary integration process has been favored by the stabilizing role of the tight US dollar peg of the Chinese yuan, which has underpinned the stable high-growth performance of China. Given China's impressive growth performance, it may be regarded as a simple question of time to overcome the low degree of liquidity of Chinese capital markets, which still constitutes the main impediment to the rise of the Chinese yuan into the position of the leading international and regional currency. Yet, the very benign liquidity conditions originating in US monetary policy have de facto put an insurmountable constraint to the emergence of the Chinese yuan as regional anchor currency, as it has enhanced the fragmentation of the Chinese capital market. This reinforces the leading

role of the US dollar in the region. Even more, with an increasing bad loan problem in the formal and shadow banking sector, China's growth perspectives are deteriorating. The - possibly - upcoming monetary tightening in the US may further enhance financial instability in China and East Asia as previous overinvestment may become visible. Therefore, it is not unlikely, that China's prominent role as a growth engine in East Asia will decline in the future. Given the overall declining growth trend in East Asia, the common good of intra-regional exchange rate stability may be at risk, as China may feel tempted to follow the beggar-thy-neighbor policies, which have been more or less frankly pursued by its neighbors since the Asian financial crisis.

Figure 10: Recent Exchange Rate Movements of the Chinese Yuan against the US Dollar and Aggregated Trading Partners



Source: PACIFIC Exchange Rate Service.

As shown in Figure 10 the trend that the East Asian currencies tended to depreciate against the Chinese yuan seems to have been reversed in 2014. The Chinese yuan started to depreciate not only against the US dollar, but also against the average of its trading partners. It has to be seen, if this is just a strategy to deter speculation on the gradual appreciation path of Chinese yuan, or if this is indication that China has joined Japan in the attempts to create national growth momentum at the cost of the neighbors. In this case, the common good of East Asian intra-regional exchange rate stability would be at risk.

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