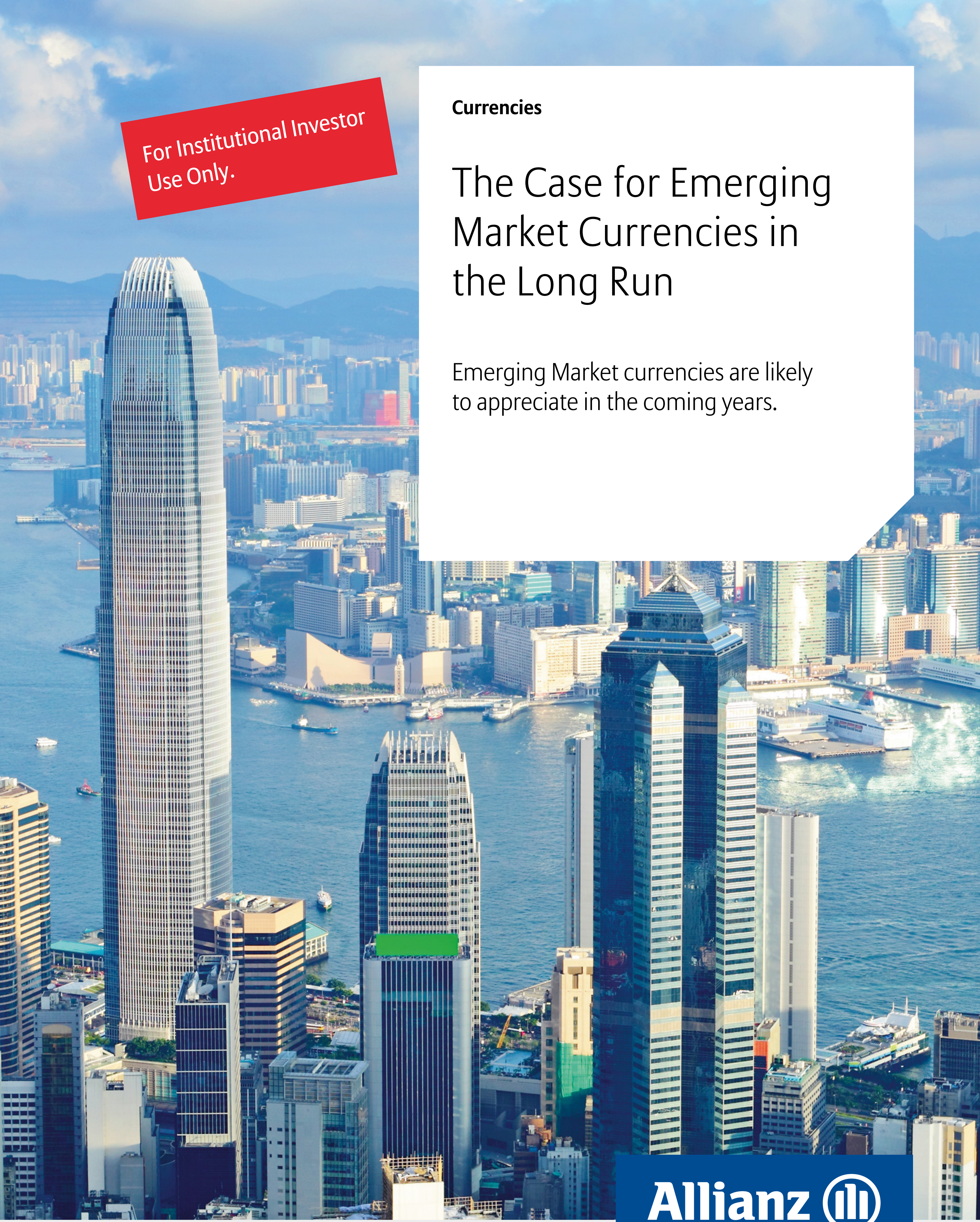

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Currencies

The Case for Emerging Market Currencies in the Long Run

Emerging Market currencies are likely to appreciate in the coming years.

Allianz Global Investors

Understand. Act.

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Imprint

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The Case for Emerging Market Currencies in the Long Run

During the last decade, many emerging market currencies have appreciated substantially against currencies of developed economies.

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For instance, the exchange rate for the Chinese renminbi (RMB) vs. the US dollar (USD) was 8.28 at the beginning of the 2000s. At the end of August 2012, the rate was around 6.35 RMB to 1 USD. We have seen similar developments for other Asian currencies related to the USD. Just to name a few: the Singapore dollar has appreciated from around 1.85 ten years ago to 1.25, the Korean won from around 1300 to around 1100, and the Thai baht, which massively depreciated during the Asian crisis in 1997, from around 45 to around 31 as of August 2012. The appreciation of emerging market currencies is not confined to Asia. For instance, the Brazilian real stood at around 3.7 against the USD in the course of 2002; by August 2012, the rate is just above 2.

In the past decade the Chilean and Columbian peso have also appreciated substantially. In Europe the Polish zloty has gone from around 4.6 against the USD to around 3.25, and from around 4.9 against the euro to just above 4 in the same period. We have seen a similar move for the Czech koruna. Admittedly, not all currencies in the developing world have appreciated. The Russian ruble in August 2012 is at around the same level vs. the USD as it was ten years ago following a depreciation over the past four years reversing the appreciation it experienced until 2008. India's rupee, having appreciated in the 2000s until the beginning of the financial crisis in 2007, has more than given up its gains and is now around 10% cheaper against the USD compared to ten years ago. We could also name the Hungarian forint, the Mexican or the Argentine peso as currencies which have lost value. Nevertheless, the majority of currencies in the emerging markets we looked at have appreciated against the US dollar as well as against the euro since around 2003/04 (since then, the euro has been moving sideways against the US dollar).

What is our outlook for emerging market currencies going forward? In this topic, we would like to focus on the secular outlook, rather than on possible trends in the coming months or quarters.

Table 1: Emerging Market FX against USD

	USD vs. FX rate (Nom)**				
	29.12.2000	30.12.2002	31.12.2007	31.12.2010	17.08.2012
Brazil	1.95	3.54	1.78	1.66	2.02
China	8.28	8.28	7.30	6.61	6.37
Hong Kong	7.80	7.80	7.80	7.77	7.76
India	46.68	47.98	39.41	44.71	55.75
Indonesia	9.675	8.950	9.393	8.996	9.519
Republic of Korea	1.265	1.186	935	1.126	1.134
Russia	28.16	31.96	24.60	30.54	32.04
Singapore	1.73	1.73	1.44	1.28	1.25
Taiwan	33.08	34.64	32.43	29.30	30.00
Malaysia	3.80	3.80	3.31	3.06	3.13
Philippines	50.00	53.60	41.25	43.80	42.36
Thailand	43.39	43.11	33.72	30.06	31.51

** Source: Bloomberg; Past performance is not a reliable indicator of future results.

Purchasing power parity as a measure for relative valuation of currencies

Valuation is very likely the single most important factor when considering the future valuation outlook of any asset class. This is also true for currencies. The question arises: what is the true and fair value of a currency? The usual approach for identifying the long-term "fair" exchange rate of two currencies is to compare the rate observed in the currency markets against the purchasing power parity (PPP). PPP is the implicit exchange rate at which the amount of money needed to purchase the same goods and services in two countries is the same. The concept is based on the law of one price, which says that, in absence of barriers to trade and transaction costs, prices for identical goods and services should be the same when taking into account the exchange rate. It is important to stress that PPP measures the real value of a currency.

Let's use an example: if the domestic price level increases (falls) relative to the foreign currency, the domestic currency appreciates (depreciates) in real terms, as more (less) units of the foreign currency are necessary to purchase the same basket of goods. Only if the observed market exchange rate becomes more (less) expensive relative to the foreign currency does the domestic currency also appreciate (depreciate) in nominal terms.

Estimating PPP is anything but trivial and observed exchange rates are unlikely to be at PPP at all times for various reasons: measurement of price levels can differ from country to country; not all goods are tradable, which is especially true for services, hence, not all goods are directly comparable; trade barriers and transaction costs as well as market distortions can prevent prices from converging. Nevertheless, PPP is widely perceived as a useful yardstick for measuring relative valuations of currencies.

How are emerging market currencies currently priced against PPP?

We are focusing here on a selection of major emerging market currencies against the USD.

According to data from the University of Pennsylvania ("Penn World Table"), our selection of 12 emerging market currencies – using a simple average - were roughly 50% undervalued relative to USD based on PPP in the year 2000. In other words, if an American exchanged 1 USD into emerging market currencies, he could buy twice as many goods than the locals in emerging market economies.

By 2010, the undervaluation declined to around 35%, meaning that in real terms, not necessarily in nominal terms, emerging market currencies have appreciated by around 15%. As of August 2012, we calculate that the undervaluation in real terms has shrunk to just over 32% during the last two years.

As pointed out above, it is important to differentiate between real and nominal currency revaluation. The appreciation in real terms over the past decade or so could have occurred in different ways: theoretically, it is possible, that the nominal exchange rate appreciated while relative price levels in an emerging market relative to the US remained unchanged. Alternatively, cumulative inflation in an emerging market could have been, on average, around 15% higher than in the US, while nominal exchange rates did not change. Or, most likely, some combination of relative inflation and nominal exchange rate movement has taken place. In fact, it is also possible that inflation in an emerging market was lower (higher) than in the US, which was more than offset by the emerging market's currency revaluation (devaluation) against the USD. As shown in Table 1, however, in the period from 2000 to August) 2012, Brazil, India, Indonesia, Russia and Thailand have indeed seen their currencies devalued in nominal terms against the USD, even though in real terms the undervaluation vs. PPP has declined.

When differentiating by country, we find that 11 of the 12 currencies we selected, are still undervalued, with Brazil being the only exception as it is marginally on the expensive side. China is undervalued by 40%, India by 65% and Russia by 33%, just to highlight the BRIC ("Brazil, Russia, India, China") economies.

As an aside: using a very popular approach to calculate PPP based on a single-product-basket, i.e. the McDonald's Big Mac-Index, which calculates the PPP of a Big-Mac for different countries, we come to very similar conclusions: Brazil is slightly expensive, China and Russia are undervalued by 43 and 46% respectively and, on average, our selected countries are currently undervalued by around 33% (no data is available for India). There is also a Starbucks Tall Caffé Latte index, which is less well-known but again gives similar results.

Let's summarize our findings so far: a) measured against purchasing power parity, emerging market currencies are undervalued, and b) this undervaluation has declined over time.

Table 2: Over-/ Undervaluation relative to USD based on PPP

	Over-/ Undervalued vs. PPP			PPP based on Big Mac Index
	2000	2010	2012	2012
Brazil	–39.3%	6.5%	1.0%	14.9%
China	–61.3%	–46.1%	–40.0%	–43.3%
Hong Kong	–1.9%	–24.5%	–20.8%	–50.8%
India	–73.0%	–63.2%	–65.3%	
Indonesia	–69.4%	–32.6%	–31.7%	–41.5%
Republic of Korea	–33.7%	–27.7%	–25.2%	–25.4%
Russia	–76.7%	–36.0%	–32.5%	–46.4%
Singapore	–29.6%	–20.1%	–7.9%	–18.7%
Taiwan	–32.8%	–42.2%	–39.9%	
Malaysia	–48.8%	–39.9%	–38.5%	–45.6%
Philippines	–54.9%	–44.4%	–38.3%	–36.0%
Thailand	–62.1%	–47.8%	–45.9%	–39.8%
Average	–48.6%	–34.8%	–32.1%	–33.3%

Sources: Penn World Table 7.1, Bloomberg, Datastream, Allianz Global Investors;
Date: 17.08.2012

Using the Balassa-Samuelson effect to estimate future real appreciation

Is this pure coincidence? No. This finding is backed by economic theory, the so-called Balassa-Samuelson-effect, which we will explain in a few lines using an example.
We assume an economy consisting of two sectors only: one producing tradable goods, e.g. industrial goods, and the other producing non-tradable goods, e.g. hairdressing. The level of productivity in emerging markets in the industrial goods sector, in which emerging markets are price takers, is typically lower than in developed markets because, for example, the technology used is of an older generation than in the developed world. Productivity in hairdressing, though, is roughly the same as in the developed world. However, as the industrial goods sector is supposed to be important for the economy, the overall wage level in the economy is determined by the industrial goods sector. This matters for wages: labour is paid according to its marginal productivity in the industrial goods sector. As a consequence, wages in hairdressing and, logically, the emerging market economy's overall wage level, is lower than in developed economies. The overall lower wage level also determines the overall price level. While tradable goods are priced at international prices (lower productivity in emerging markets is compensated by lower wages), non-tradable goods in emerging markets are cheaper than in developed economies because of lower wages. Consequently, the price level in emerging markets tends to be systematically lower than in developed markets. Consequently, the currency is systematically undervalued, as the exchange rate only applies to tradable goods but not to non-tradable-goods. Our findings above - undervalued currencies in emerging markets - are therefore fully in line with what economic theory suggests.

Also the second finding – the emerging market currency's appreciation in real terms over time – is supported by the Balassa-Samuelson effect: as emerging markets catch up over time, productivity in the tradable goods sector increases. Importantly, productivity gains are higher than in the developed world simply because emerging markets are closing the gap. Consequently, wages in the tradable goods sector pick-up more than in the developed world and, as a consequence, the overall wage and price level in the emerging economy rises. In real terms, emerging market currencies appreciate.

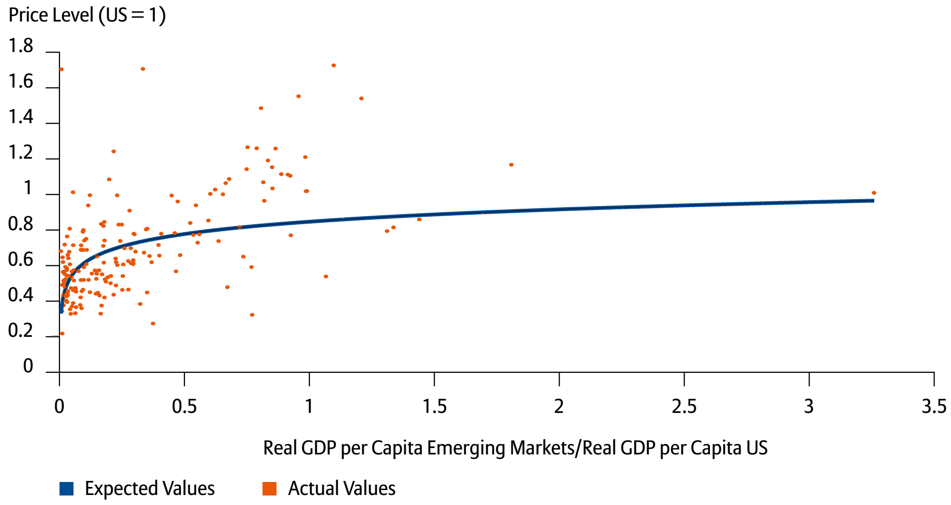
How much and how quickly do emerging market currencies actually appreciate when their economies catch up ?

How can the Balassa-Samuelson effect be quantified? In order to answer these questions, we carried out two regressions analyses, following an approach applied by K. Rogoff as well as by J. Frankel.

In a first step, we regressed (the log of) price levels of 190 countries relative to the US against (the log of) their per capita GDPs relative to the US, using Penn World data for the year 2010. Our regression equation says that for every 1 % increase in the relative per capita GDP, the relative price level increases by around 0.2 % (the coefficient is statistically significant, coefficient of determination R^2=0.3). This sensitivity is slightly lower than the result found by Rogoff as well as by Frenkel using data from 2000. Back then, every 1 % p.c. GDP increase resulted in an increase in relative prices of around 0.3 to 0.4 % (the R^2=0.4 was slightly higher).

We then compared the observed relative price levels relative to our regression equation – the "Balassa-Samuelson line" – we find that two countries out of our list of 12, notably Brazil and Indonesia, are more expensive than suggested by our regression. In other words, their price levels are "ahead of the curve": their price levels relative to the US would be consistent with economies with a higher relative per capita GDP. Still, Brazil is only slightly more expensive relative to PPP. Indonesia is even undervalued, as table 2 shows. All other markets we selected are below the valuation levels suggested by our regression. (Clearly there are many other currencies in our regression sample, which we do not show here in detail, which we find to be overvalued).

Chart 1: Price level relative to US vs. per capita GDP relative to US (not in log terms)



Source: Penn World Table 7.1, Allianz Global Investors; Date: July 2012

Table 3: Currency Deviation from Regression Line (deviation from "Balassa-Samuelson-line")

	2010
Brazil	61.5%
China	–16.3%
Hong Kong	–10.1%
India	–35.9%
Indonesia	14.8%
Republic of Korea	–8.7%
Russia	–11.5%
Singapore	–10.2%
Taiwan	–29.0%
Malaysia	–13.9%
Philippines	–2.0%
Thailand	–20.4%
Average	–17.1%

Source: Penn World Table 7.1, Allianz Global Investors;
Date: July 2012

With our second regression, we wanted to get an idea about the adjustment pace. We therefore regressed for all markets the actually observed relative price level in the year 2010 against two explanatory variables: the deviation from the Balassa-Samuelson line in the year 2000, i.e. one decade earlier, and our fitted value for 2010. The idea is that the latter variable should be the anchor value for 2010, while the regression coefficient for deviation from fair value ten years ago should tell us something about the adjustment pace. Our findings confirm our expectations: the fitted value indeed is a good explanatory factor for the observed value. Most interestingly, estimated regression coefficient for the deviation in year 2000 is around 0.5. This implies that over a period of ten years, one should expect that around half of the deviation relative to the Balassa Samuelson line should be removed. Even when assuming that our selected group of countries did not experience any convergence in terms of productivity gains and per capita GDP relative to the US, we should expect China's real effective exchange rate to appreciate in the years 2010 to 2020 by around 8% (0.5 *16.3%), India by around 18% in real terms (0.5*35.9%), Thailand by around 10% (0.5*20.4%), while reversion to the mean would imply that the Brazil is likely to depreciate in real terms by around 31% (= 0.5* –61.5%).

Clearly the assumption of no productivity gains and no convergence in per capita GDP of emerging markets relative to the US is not realistic. As data from the Conference Board show, labour productivity has been consistently higher in most emerging markets than in developed economies. With productivity gains being the key driver for per capita GDP growth (it is actually the only driver in Solow's

Table 4: Labour Productivity per Person Employed

	since 2000	since 1990	since 1980
Germany	0.7%	1.1%	1.3%
United Kingdom	0.8%	1.5%	1.7%
United States	1.4%	1.7%	1.6%
Poland	3.0%	3.9%	2.7%
Russian Federation	4.3%	1.1%	NA
USSR	4.8%	1.0%	1.0%
China	10.7%	8.5%	7.2%
Hong Kong	3.4%	2.8%	3.3%
India	5.3%	4.5%	4.0%
Indonesia	3.5%	3.0%	2.4%
Philippines	2.0%	1.4%	0.5%
Singapore	1.8%	2.8%	3.0%
South Korea	2.8%	3.8%	4.5%
Taiwan	2.9%	3.8%	4.3%
Thailand	2.3%	3.1%	3.7%
Brazil	1.1%	1.3%	0.3%

Source: Conference Board, Allianz Global Investors; Date: August 2012

neoclassical growth theory) and productivity gains likely to be superior in emerging markets, which are in the process of catching up to developed markets, we should expect per capita growth to be higher in emerging markets as well.

It goes without saying that estimates over the next decade for per capita GDP growth are extremely difficult. Table 5 shows our best estimates for the coming decade. The figures are slightly lower than p.c. GDP growth rates in the past decade. This assumption makes sense: as emerging markets have already started to converge, their future productivity, and hence their p.c. GDP, is likely to be somewhat lower than in the past. Still, we think that our expectations are rather conservative.

Let’s now combine the two effects, which we have identified above, i.e. the reversion to the mean (to the “Balassa-Samuelson line”) and the impact of higher relative GDP growth vs.

Table 5: Per Capita GDP growth estimates p.a. 2010 –2020

Brazil	3.5%
China	8.0%
Hong Kong	3.5%
India	4.5%
Indonesia	4.0%
Republic of Korea	3.0%
Russia	4.0%
Singapore	4.0%
Taiwan	4.0%
Malaysia	4.0%
Philippines	4.0%
Thailand	4.0%
USA	1.3%

Forecasts are inherently limited and should not be relied upon as a guarantee of future results.

Source: Allianz Global Investors Conference Board; Date; August 2012

Table 6: Estimated Real Appreciation

Estimates for 2010 – 2020	annual p.c DP relative to US	10 year cumulative excess growth vs US	implied real appreciation (factor 0,2)	real appreciation due to reversion to B-S-line	total real appreciation	p.a. real appreciation
Brazil	2.3 %	24.9 %	5.0 %	–30.8 %	–25.8 %	–2.9 %
China	6.8 %	92.2 %	18.4 %	8.1 %	26.6 %	2.4 %
Hong Kong	2.3 %	24.9 %	5.0 %	5.0 %	10.0 %	1.0 %
India	3.3 %	37.7 %	7.5 %	18.0 %	25.5 %	2.3 %
Indonesia	2.8 %	31.2 %	6.2 %	–7.4 %	–1.2 %	–0.1 %
Korea, Republic of	1.8 %	18.9 %	3.8 %	4.3 %	8.1 %	0.8 %
Russia	2.8 %	31.2 %	6.2 %	5.8 %	12.0 %	1.1 %
Singapore	2.8 %	31.2 %	6.2 %	5.1 %	11.3 %	1.1 %
Taiwan	2.8 %	31.2 %	6.2 %	14.5 %	20.8 %	1.9 %
Malaysia	2.8 %	31.2 %	6.2 %	6.9 %	13.2 %	1.2 %
Philippines	2.8 %	31.2 %	6.2 %	1.0 %	7.2 %	0.7 %
Thailand	2.8 %	31.2 %	6.2 %	10.2 %	16.4 %	1.5 %
Average					10.3 %	0.9 %

Source: Allianz Global Investors; Conference Board; Date: August 2012;
Forecasts are inherently limited and should not be relied upon as a guarantee of future results.

the US. In table 6, the first part is reflected in columns 1 to 3, the second effect in column 4.

We come to the conclusion that, with the exception of Brazil and Indonesia, all emerging market currencies are likely to see a gradual appreciation in real terms in the coming decade. The country which is likely to see the biggest appreciation in real terms is China: around 26 % in total or around 2.4 % p.a. On average, the cumulative real appreciation of our selection of 12 countries is expected to be around 10 % in total and 1 % p.a. This is less than in the decade from 2000 to 2010, which can be explained by the fact that emerging markets have already played catch-up. Excess productivity, and consequently excess growth, is therefore likely to be lower. The appreciation in real terms is also expected to continue post 2020, provided that the selected countries continue to outgrow the developed world in terms of per capita GDP – which is highly likely.

From Real to Nominal Currency Appreciation

What matters for investors in emerging market assets, however, is the expected nominal appreciation rather than the real one. To phrase it differently: if, for instance, the RMB devalued against the USD or the EUR, but appreciated in real terms because of excess inflation, the international investor would lose money. As data shown above indicate, this is what actually happened in some of the markets in the past decade. However, in the long run, we think it is highly likely that at a significant part of the appreciation in real terms ends up as an appreciation of the nominal currency. Why? If the appreciation in real terms persistently leads to higher inflation only, we would expect economic, political and social pressure within emerging economies to rise. Allowing the currency to appreciate in nominal terms helps relieve inflationary pressure and avoid probable economic overheating. This is exactly what could be observed in China in the past decade. The appreciation of emerging market currencies in nominal terms, we think, is indeed a very long-term story.

In terms of direction, this is also what the consensus expects. According to Consensus Economics, our selection of emerging market currencies could, on average, see a cumulative appreciation of their currencies in nominal terms of around 5% by 2018 (maximum forecast horizon), compared to our expectation of around 10% by 2020. We believe that the consensus is rather too conservative and that the actual appreciation in nominal terms could turn out to be higher because a) our assumptions for real growth may turn out to be too conservative, as mentioned above, and b) because emerging markets may put more emphasis on trimming inflation, resulting in real appreciation and stronger nominal currency appreciation rather than inflation.

Table 7: Estimated Real and Nominal Appreciation of the Nominal EM Currencies vs. USD

	Real appreciation next 10 y	Consensus nominal appreciation until 2008	delta
Brazil	–25.8%	–4.0%	–21.8%
China	26.6%	18.3%	8.2%
Hong Kong	10.0%	–0.2%	10.2%
India	25.5%	9.3%	16.2%
Indonesia	–1.2%	1.2%	–2.4%
Korea, Republic of	8.1%	12.2%	–4.1%
Russia	12.0%	–5.8%	17.8%
Singapore	11.3%	9.0%	2.3%
Taiwan	20.8%	8.7%	12.1%
Malaysia	13.2%	6.7%	6.5%
Philippines	7.2%	2.3%	5.0%
Thailand	16.4%	7.1%	9.3%
average	10.3%	5.4%	4.9%

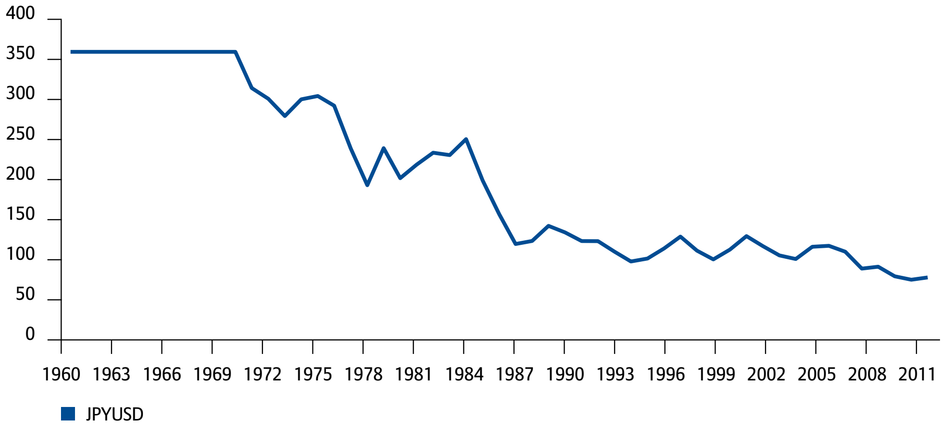
Source: Allianz GI Economics & Strategy, Consensus Economics, Bloomberg; Date: August 2012
Forecasts are inherently limited and should not be relied upon as a guarantee of future results.

The expectation of appreciating emerging market currencies in nominal terms is also confirmed when considering how the Yen performed since WWII, when Japan started to become an industrialized economy.

Note: "JPY" is the international so called ISO code for the Japanese Yen. USD is the one for the US-Dollar.

Until the collapse of Bretton Woods in the early 1970s, the USDJPY rate was fixed at 360. The Yen, however, had already appreciated substantially in real terms during the Bretton-Woods years, as Japanese inflation exceeded US inflation up until the late 1970s. When the currency started to float freely in the early 1970s, the Yen immediately started to appreciate also in nominal terms, albeit interrupted by weakness in the early 1980s.

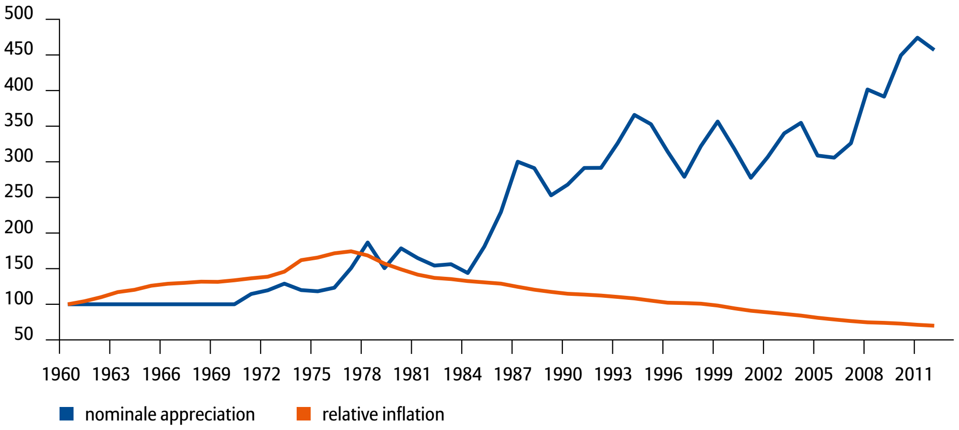
Chart 2: US-Dollar in Japanese YEN (USD/JPY)



Source: Datastream, Allianz Global Investors Economics & Strategy; Date: August 2012
Past performance is not a reliable indicator of future results.

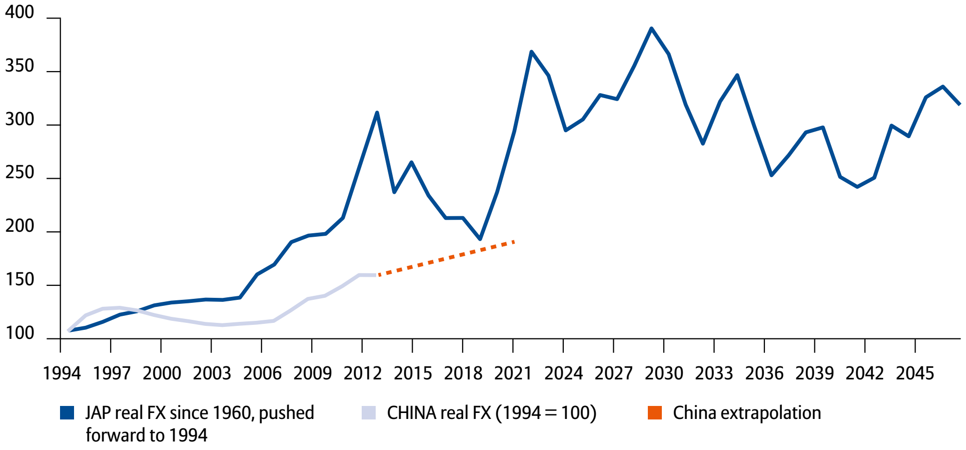
Chart 3: USDJPY and Relative Inflation (indexed)

01.01.1960 = 100



Source: Datastream, Allianz Global Investors Economics & Strategy; Date: August 2012
Past performance is not a reliable indicator of future results.

Chart 4: Real exchange rate Yen & Renminbi vs. US-Dollar



Source: Allianz Global Investors Economics & Strategy; Date: August 2012
Forecasts are inherently limited and should not be relied upon as a guarantee of future results.

We think we can use the development of the Yen from around 1960 also as blueprint for China's RMB from the mid 1990s onwards. In the mid 1990s, China was around 10 to 15 years into the restructuring of its economic model, just where Japan was in 1960 fifteen years after the rebuilding of its economy post WWII began. If our comparison is correct, the RMB today could be roughly comparable to the Yen in the mid to late 1970s.

If we extrapolate the real appreciation of the RMB by 2020 at our estimated rate of close to 2.5 % p.a. in the coming years, the cumulative real appreciation of the RMB against the USD since 1994 would very much equal the real appreciation of the Yen against the USD between 1960 and the mid 1980s. What's more, if the RMB actually followed the path of the Yen, we could see the RMB appreciate in real terms against the USD until around 2030. As pointed out above, real appreciation is likely to also translate into nominal appreciation.

Understand.

Clearly, neither real nor nominal appreciation is likely to take place in a linear pattern.

Just as the Yen experienced years of nominal de-valuation against the USD – especially in the early 1980s – while remaining in an overall long-term appreciation trend, the RMB has devalued slightly against the USD recently and several other emerging market currencies have lost significant value against the USD since the beginning of the financial crisis. There are various reasons why this happened: rising risk aversion in the wake of the financial crisis, leading to a repatriation of funds from emerging markets perceived to be risky; rate cuts in emerging markets making carry investing in emerging markets less attractive; emerging market residents using the liberalization of internationalization of their financial markets to transfer assets abroad. All these factors have been in place to different degrees in the past few years. In addition, price shocks in emerging markets, both inflationary and deflationary, could easily impact price levels in there as well as nominal exchange rates going forward.

Still, we think that both economic theory as well as empirical data confirm our expectations that emerging market currencies will appreciate in the coming years, both in real but also in nominal terms.

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