7-2018

A Key Currency View of Global Imbalance

Hiro Ito
Portland State University, ito@pdx.edu

Robert N. Mccauley
Bank for International Settlements (BIS)

Citation Details

Ito, H., & McCauley, R. N. (2019). A key currency view of global imbalances. Journal of International Money and Finance, 94, 97-115.

A key Currency View of Global Imbalances

Hiro Ito[1] and Robert N. McCauley[2]

July 6, 2018

Abstract

This study divides the world into currency zones according to the co-movement of each currency with the key currencies. The dollar zone groups economies that produce well over half of global GDP. The euro zone now includes almost all of Europe and some commodity producers, but remains less than half the size of the dollar zone. The dollar zone share has shown striking stability despite big shifts across zones over time. These include the demise of the sterling zone and the expansion of the DM/euro from northwestern Europe to Europe and beyond. Global imbalances look very different from a currency perspective. In the 2000s, the dollar zone's current account improved as the dollar depreciated, even as the US current account plumbed all-time lows. Thus, the Mundell-Fleming relationship between the exchange rate and the current account held up for the dollar zone but not the US economy. The dollar zone NIIP showed net wealth in ????. Thus, neither flow not stock readings support widespread predictions in the early 2000s of an imminent dollar crash. In fact, most of the secular widening of current accounts occurred within currency zones, where by definition investors bear limited currency risk. Our account of the dollar's dominance rests not on the US economy's size but rather on the size of the zone with limited currency risk vis-a-is the dollar. In such a world, the rise of another large economy poses the question not of relative size but rather of re-alignment of third currencies. What if the renminbi becomes a key currency alongside the dollar and the euro? Already some emerging market currencies are co-moving with the renminbi against the dollar. On current evidence, a renminbi zone would shrink the dollar zone, widen its current account deficit and leave it with a negative NIIP.

Keywords: global imbalances, current accounts, currency zones, portfolio balance
JEL classification: F31, F32, F33, F41

[1] (Corresponding author): Department of Economics, Portland State University, 1721 SW Broadway, Portland, OR 97201, United States.

[2] Monetary and Economic Department, Bank for International Settlements (BIS), Basel, Centralbahnplatz 2, CH 4002 Basel, Switzerland

1. Introduction

The standard view of global imbalances focuses on current accounts by country. Figure 1 plots surpluses and deficits as positive and negative percentages of global GDP, over the period of generalised floating in 1973 and extending out to 2023 using IMF projections.

Observers take the imbalances to be unsustainable and subject to disorderly and costly "correction" when they reach a substantial share of global GDP. Thus, when the deficits reached 1% of global GDP in the mid-1980s, and the US deficit hit 3% of US GDP, major countries negotiated macroeconomic and exchange rate policy changes to reduce them. When the deficits reached almost 1½% of global GDP in the mid-2000s, and over 5% of US GDP, leading international economists warned of a sharp decline in the US dollar's value, or even a dollar crisis. Krugman (2007) foresaw the dollar reaching its Wylie E Coyote moment, when its lack of fundamental support would become evident and its fall would be rapid (see also Summers (2004), Edwards (2005), Obstfeld and Rogoff (2005) and Setser and Roubini (2005)).

Following Avdjiev et al (2016), we insist that use of the major currencies, notably the dollar and the euro, spans national borders. The burden of our argument is that the US current account cannot be analysed in isolation, but only in relation to that of the dollar zone defined by economies with currencies that are relatively stable against the dollar. Such stability implies investing and borrowing in dollars incurs less currency risk than doing so in the euro or yen. Indeed, investors show "zone bias" in the currency composition of their portfolios. Because key currencies anchor other currencies and external portfolios show "zone bias", global imbalances require a zone, not national, analysis.

[Insert Figure 1 here]

A historical analogy is the sterling area that came into existence in the 1930s and persisted into the 1970s (Schenk (2010)). As long as economies like Australia, India, Portugal, Sweden and New Zealand borrowed in sterling, held official reserves in sterling, and placed private

investments in sterling, then the relevant current account for sterling was that of the sterling area, not that of the United Kingdom (Drummond (2008)).

Our argument advances in four steps. First, using the inductive technique of Haldane and Hall (1991) and Frankel and Wei (1996) and following Kawai and Akiyama (1998, 2000), McCauley and Chan (2014), BIS (2015) and Ito and Kawai (2016), we divide economies into currency zones according to the co-movement of currencies. An economy forms part of the dollar zone not only if its currency is pegged to the dollar, but also to the extent that its floating currency varies less against the dollar than against euro, yen or sterling. As discussed below, this can result not only from exchange rate policy but also from follow-the-leader monetary policy. It can also arise from market forces, operating against the backdrop of trade links in accord with the gravity model.

Our first major finding is that the dollar zone emerges as covering 50-60% of the world economy, not just the US economy's share at a fifth or a quarter. This share is smaller than that of Iltzeki et al (2017), who find that the dollar zone covers XX%, but similar to that of Tovar and Nor (2018) when they use the same technique at 60%. We observe this consistently despite major tectonic shifts. The sterling zone disappeared by the 1970s. And the Deutsche mark and later the euro zone spread out from its core in north western Europe and in recent years gained at least partial adherence from commodity currencies.

Second, we then allocate each country's current account and international investment positions to the four (and then three) zones according to its currency's loading on the key currencies. We thereby reduce the dimension of global imbalances from N economies to 3-4 currency zones.

Our second major finding is that surpluses elsewhere in the dollar zone have offset the US current account deficit to a varying but often significant extent. As a result, the time profile of the dollar zone's current account very much differs from its US counterpart. In particular, after

the Asian financial crisis of 1997-98, growing surpluses in dollar-anchored Asia offset the widening of US deficits. Indeed, on the eve of the Great Financial Crisis (GFC) in 2007, when many feared a dollar collapse, the dollar zone was nearing a balanced current account.

Third, we then decompose global imbalances into imbalances between zones and those within zones. Observers interpreted the widening of the sum of absolute values of current accounts before the GFC as evidence for the globalisation of portfolios.

Our third major finding is that the secular widening of global imbalances before the GFC (Faruqee and Lee (2009)) took place mostly *within a*nd not *between* currency zones. Positions within currency zones by definition imply less currency risk, so our finding qualifies the inference of more globalised portfolios from the original observation. Moreover, since the GFC, the much-remarked narrowing of global imbalances occurred only *within* zones. Imbalances across zones have persisted, requiring positions .

Fourth, we assess the consequences of the renminbi becoming a key currency, a possibility investigated by Subramanian and Kessler (2013), Fratzscher and Mehl (2014), Eichengreen and Lombardi, Ito (2017) and Marconi (2017). For the purpose of this exercise, we suspend our prior that only the dollar, euro and yen show the trading volumes (means of payment) and uses as unit of account and store of value that qualify them as key currencies. We consider observations from 2015-2017. In this period, the IMF designated the renminbi as a constituent of the SDR, and the August 2015 reform of the renminbi fixing marked a structural break in the strength of co-movements between the renminbi and other emerging currencies (McCauley and Shu (2018)).

Our fourth major finding is that the renminbi as a key currency would shrink the dollar zone, widen its current account and reduce its net international investment position. If the dollar's role includes its use as an anchor for the Chinese currency, then the answer to "The international role of the dollar: does it matter if this changes?" (Goldberg (2011)) must be yes.

This study joins recent work that emphasises the global uses of the dollar and their interdependence. As noted, Iltzeki et al (2017) also identify currency anchors using a different technique and find predominance of the dollar in this role. Gopinath and Stein (2018) emphasise dollar invoicing as a driver of the dollar share of official foreign exchange reserves; Ito et al (2015) considered dollar anchoring of currencies as an alternative driver. The emphasis of this body of work on the dollar's external role as anchor or unit of account differs from the conventional approach, as seen in Eichengreen, et al (2017), of using the size of the US economy as the driver of the dollar share of official foreign exchange reserves.

The rest of this paper is in five sections. Section 2 uses exchange rates to estimate the weights of the key currencies for every other currency and then uses these weights to form currency zones. Section 3 aggregates individual economies' current accounts and external positions into currency zone current accounts and external positions. Section 4 decomposes global imbalances into those across zones and those within zones. Section 5 reports on the renminbi taken as a key currency. Section 6 concludes.

2. Estimating currency zones

This section divides the world economy output into currency zones, finding that the US dollar zone accounts for a fairly consistent 50-60% of world GDP. This consistency arises notwithstanding systematic movement of currencies from the dollar to the Deutsche mark/euro zone over time. The relatively stable dollar zone share arises from systematically faster growth in the dollar zone that offsets its geographic shrinkage.

We first need to estimate how much each currency co-moves with the US dollar, the euro (or the Deutsche mark before 1999[3]), the Japanese yen and the British pound. Our choice of these key currencies is a prior that reflects their status as the most traded currencies in the

[3] Before the euro, the SDR included the French franc,,suggesting that it and the Deutsche mark be treated symmetrically. However, both its parity changes under Bretton Woods and subsequent performance in the ERM point to what Fratzscher and Mehl (2014) call Deutsche mark dominance.

Triennial Survey of foreign exchange. From 1999 to 2015, they comprised the IMF's Special Drawing Right (SDR), which the renminbi joined in that year. We drop the sterling after the demise of its zone in 1976. (We return to the renminbi in Section 5 below.)

The co-movement of currencies arises from exchange rate policy, monetary policy and underlying trade relations. Policy fixes the Hong Kong dollar or the Bulgarian lev against the dollar and the euro, respectively. Policy also governs the Singapore dollar, managing it against its trade-weighted basket. The authorities may intervene in the market less systematically to stabilise the dollar exchange rate, as in Dooley et al (2004). Elsewhere, the setting of policy interest rates with reference to that of a major central bank can link the two exchange rates policy (Hofmann and Bogdanova (2012); Hofmann and Takáts (2015)). For instance, the Norges Bank explicitly discusses the spread of its policy rate over that of the ECB, and the kroner shares most of the euro's moves against the dollar. Trading relations matter as well: the Mexican peso (the Polish zloty) tends to co-move with the dollar (euro), consistent with the predominant trading partner.

The key currency weights for each currency for each time period are estimated using a method based on Haldane and Hall (1991) and Frankel and Wei (1996).[4] The estimated weights indicate the extent that an economy belongs to each zone.[5]

More specifically, we run the following estimation model:

$$\Delta e_{it}^{i/\$} = \alpha_i \ + \beta_{i€t}\Delta e_{it}^{€/\$} + \beta_{i¥t}\Delta e_{it}^{¥/\$} + \beta_{i£t}\Delta e_{it}^{£/\$} + \varepsilon_{it} \qquad (1)$$

Here, $e_{it}^{i/\$}$ is the nominal exchange rate of home currency *i*, against the dollar (USD) while $e_{it}^{h/\$}$ on the right-hand side of the equation is the exchange rate of the euro (DM before 1999), yen and the British pound against the dollar. The movements of each currency against the dollar

[4] Haldane and Hall (1991) applied their technique to sterling over a period that included both Bank of England management and relatively free floating, while Frankel and Wei (1996) sought to discover weights in an undisclosed official basket. Among many others, Bénassy-Quéré et al (2006), Ito and Kawai (2016), Kawai and Akiyama (1998, 2000) and Kawai and Pontines (2015) applied this method.

[5] Before the introduction of the euro in 1999, we treat the weight of the Deutsche mark as the euro zone weight.

on the left-hand side are reduced to a weighted average of the movements of the euro, yen and pound against the dollar on the right-hand side, leaving a residual of idiosyncratic movement. Thus, $\hat{\beta}_{ih}$ the estimated coefficient on the rate of change in the exchange rate of key currency *h* vis-à-vis the US dollar, represents the weight of currency *h* in the behavioural basket. The dollar's weight is calculated as $\hat{\beta}_{i\$t} = 1 - (\hat{\beta}_{i€t} + \hat{\beta}_{i¥t} + \hat{\beta}_{i£t})$. If the currency is pegged to the US dollar (eg the Hong Kong dollar), then $\sum_{h=1}^{H} \hat{\beta}_{ih} = 0$ so that $\hat{\beta}_{i\$t} = 1$. Similarly, for an economy with its currency pegged to the euro (such as the Bulgarian lev), $\hat{\beta}_{i€t}$=1. When the Russian rouble tracked a half-dollar, half-euro basket, the regression produced two estimated betas of one-half for the dollar and the euro.

We apply the estimation model to each of our 172 sample economies (see Appendix 1) for 1970-2017 over rolling windows of 36 months. Hence, the coefficients $\hat{\beta}_{iht}$ are time-varying in monthly frequency. This regression is not run for the key currencies; instead, their currency weights are set at the value of one. That is, each of the home country of the key currencies is assumed to centre its own currency zone without depending on other major-currency exchange rates.

Before showing the results, we address three questions that equation 1 provokes. These concern the use of the dollar as numeraire, the significance of the estimates and the monthly frequency of the data.

Does using the dollar as numeraire load the dice in favour of finding a larger dollar zone? No is the answer. Ma and McCauley (2011) demonstrate that the same results obtain whether the dollar or the SDR is used as the numeraire. In particular, could the choice of the dollar as numeraire spuriously include floating currencies in the dollar zone? Again, no is the answer.

Consider sterling, which has floated cleanly, ie without official intervention, since 1992. Figure 2 (left-hand panel) confirms the finding of Haldane and Hall (1991) that sterling's co-

movement with the Deutsche mark rose from the mid-1970s to 1989. Since then, co-movement with the Deutsche mark/euro has varied, averaging around 0.6, in line with the share of the euro area in UK trade. Sterling's varying co-movements demonstrate that a floating exchange rate does not place a currency in the dollar zone. In principle, the degree of flexibility and the currency anchoring are separate questions.

[Insert Figure 2 here]

Should we worry about the significance of the estimates? In principle, yes, but this interacts with the choice of numeraire and data frequency. The use of the Swiss franc in the literature appealed to the sense of a small, neutral country and currency, but in fact served to make all the estimated betas highly significant. Given the predominance of the dollar as an anchor, the choice of a numeraire as volatile as possible against the dollar, ie the Swiss franc, produced significance.[6] By the same token, using the dollar as numeraire, the *absence* of a response of the Hong Kong dollar/US dollar rate to the euro/dollar or yen/dollar is precisely evidence of its dollar link.

Our use of monthly data involves a defensible trade-off. Certainly, the more concern for statistical significance, the worse the choice. But it allows us to analyse all the economies in the IMF's *International Financial Statistics* in a comparable fashion. No doubt, the identification of turning points where a currency leaves one zone and joins another requires higher frequency data. But our goal of a systemic account of global imbalances is a slower-moving macroeconomic purpose, and monthly data are fit for it.

Figure 3 shows currency geography as of four dates from the last days of Bretton Woods until now: 1969, 1985, 2001 and 2017. Three systematic changes over time in currency geography emerge.

---

[6] Of course, researchers had to construct, because they could not observe, Swiss franc exchange rates, and typically in doing so used non-simultaneous observations of exchange rates. Such errors in variables served to lower parameter estimates, especially using daily data.

[Insert Figure 3 here]

First, the sterling zone disappeared in the 1970s. The top panel shows the sterling zone in 1969; the countries included followed sterling in its 1967 devaluation. By the mid-1970s it had shrunk to little more than the United Kingdom (Schenk (2009, 2010), Schenk and Singleton (2015)). Moreover, Haldane and Hall (1991), writing at the Bank of England, conceived of sterling as trading between the dollar and the Deutsche mark starting in 1976. Invoking our observations, Schenk's narratives and Bank of England authority, we drop sterling from our key currencies as of 1976. By contrast, we retain the yen in our regressions on the strength of its number three position in foreign exchange turnover, even though the yen zone never gained much ground beyond Japan.

Second, the Deutsche mark and then the euro zone solidified its hold in Western Europe and spread eastward in the 1990s and 2000s. After the fall of the Berlin Wall, the authorities managed currencies like the Czech crown and Polish zloty against baskets including the dollar and the Deutsche mark (McCauley (1997)). As these currencies moved to floating, their economies integrated with the euro area, and their monetary policies reacted to the ECB's, they joined the euro zone. The same story may apply with a lag to the Russian rouble.

Third, starting in the 1990s the commodity currencies tended to move from a position squarely in the dollar zone to a more intermediate position between the dollar and the euro. Figure 2, right-hand panel, shows this for the Australian dollar, Brazilian real, the Canadian dollar, the Russian rouble and the South African rand. Timing and extent vary but the overall upward movement on the euro's estimated coefficient is striking. Intriguingly, "fair value" regressions for commodity currencies run by such central banks and outside economists assign powerful roles to the terms of trade, which are in turn dominated by commodity prices (Kohlscheen, et al (2017)). Could it be that the formation of the euro made for a larger euro

zone and a more powerful effect of the euro on commodity prices and through them to commodity currencies? The answer lies outside the scope of this paper.

Combining currency geography and GDP by jurisdiction[7] shows that the dollar and euro zones extend well beyond the home jurisdictions (Figure 4)). (As noted, the yen zone, not shown, never extended much beyond Japan, and Japan's economy represents a declining share of world GDP.) The gradual decline of the US and euro area economies' global GDP shares is in both cases offset by growth of the share in the rest of the zone.

Given the geographical extension of the Deutsche mark and euro evident in Figure 3, it is at first blush puzzling that the dollar zone has retained a 50-60% share of global activity. The solution is found in unbalanced growth. East Asia has grown faster from a starting point in the dollar zone and, Singapore apart, has moved only gradually into an intermediate position between the dollar and the euro. (For views of each of the four currency zones, see Appendix 3.)

3. Currency zone current accounts and external positions

This first section presents and discusses current accounts of the four currency zones. Then we use them to re-interpret the evidence that current accounts in aggregate have widened over time. Then we show how the net international investment positions of the currency zones underscore the distinction drawn above between US and dollar zone imbalances. Finally, we draw the implications of the IMF forecasts for current accounts through 2023 for the current accounts of the four currency zones.

3.1 Currency zone current accounts

Using the estimated weights for country *i* in year *t* for currency zone *h* as $\hat{\beta}_{iht}$ where $\sum_{h=1}^{H} \hat{\beta}_{iht} = 1$, we can divide the current account balance of country *i* into the four key currency

[7] We apportion economies to currency areas proportionally, unlike Ilzetzki et al (2017) in whose analysis the winner takes all.

zones (ie $CAB_{it} = \sum_h^H \hat{\beta}_{iht} \cdot CAB_{it}$). For currency zone *h*, country *i*'s currency zone current account balance (CZ-CAB) is $\hat{\beta}_{iht} \cdot CAB_{it}$.

Figure 5 shows the contribution to the four currency zones of the dollar current account balances (expressed as percentages of world GDP at market values) of China, Japan, United States, the Euro area, the other advanced economies, oil exporters, emerging Asia, and the rest of the world (ROW).[8] That is, $\frac{\sum_j^J \hat{\beta}_{jht} \cdot CAB_{jt}}{WorldGDP_t}$ where a country group is composed of *J* economies and $\frac{\hat{\beta}_{iht} \cdot CAB_{it}}{WorldGDP_t}$ for major country *i* for the dollar, the euro, the yen, and the pound zones.[9] In each panel of the graph, the solid black line indicates the current account balances of each currency zone. We take away three observations about the currency zone current account balances:[10] the contrast between the dollar zone and US current accounts; the profile of the euro zone balances; and a contrast between current account adjustment to crises in the dollar and euro zones.

[Insert Figure 5]

First, the dollar zone current account (the black line) contrasts sharply with the US current account (the blue bars) after the late 1990s. Thus, the United States began to run current account deficits in the early 1980s and they widened in the years from 2003 through 2007, averaging 1.3 to 1.4 of world GDP (Figures 1 and 5(a)). Then international economists started sounding the alarm about the sustainability of the US current account deficit and the possibility of a dollar plunge and unemployment in services on the way back to current account sustainability.

[8] We follow the IMF's definition of country groups. Appendix 1 lists our sample countries.
[9] For 2017-2023, we apply the 2017 currency weights to current account balances forecasted by the IMF.
[10] Since we do not regard the sterling as one of the key currencies after 1975, we omit showing the sterling zone current account.

However, the current account of the dollar zone flattened out at less than 1% of global GDP after the Asian Financial Crisis and subsequently narrowed to approach balance in 2007 on the eve of the crisis (Panel (a) of Figure 5).[11] In the years before and after the GFC, the surpluses elsewhere in the dollar zone, in China, elsewhere in emerging Asia and in oil exporters, offset the US current account deficits.[12] Thus, while the national US current account reached its all-time widest in 2006, the dollar zone current account never reached its widest in 1986. On this view, what were called global imbalances were actually imbalances within the dollar zone. There, the net wealth transfers went from one set of investors with a home bias towards the dollar to another set of investors with a zone bias to the dollar.

With the dollar zone near current account balance on the eve of the GFC, the rapid appreciation of the dollar in 2008-09 in the immediate aftermath of the GFC's outbreak was not surprising. Moreover, as we demonstrate below, its international investment position was also near balance.

Second, the euro zone (and before it, the DM zone) has run surpluses except after the second oil shock and German re-unification. That said, its recent surpluses have no precedent. Again, the crisis of 2010-11 was a crisis at the centre of a currency zone, this time the euro area. The shift to surplus in the euro area was not offset by developments elsewhere in the euro zone. Thus, while the post-crisis narrowing of the US current account deficit left the larger dollar zone near balance, the similar increase in the euro area's surplus put the euro zone in record surplus.

Third, the current account adjustment to the wake of the recent euro area sovereign crisis differs from the pattern observed after crises in the dollar zone. There, whether the periphery, as in 1982 and 1997, or the centre, as in 2007-08, serves as crisis epicentre, current accounts

[11] Current account balances are subject to errors and omissions, so that current accounts in Figure 3 do not add up at zero. Currency zones' balances may also be affected by errors and omissions.

[12] Contrast to the savings glut of Bernanke (2005), a non-monetary model with unspecified source of Asian preference for US investment.

redistribute themselves within the dollar zone. Thus, when commercial banks cut off credit to Mexico, Brazil and Argentina in 1982, a US current account deficit appeared and widened to allow the Latin American current accounts to narrow. Whereas before 1982, the US current account was hardly contributing to the dollar zone deficit, by 1984-85, the US current account deficit had grown to account for almost its entirety. Again, when commercial banks cut off credit to Thailand, Indonesia, Malaysia and Korea in 1997-98, the US current account deficit widened to absorb the East Asian current accounts swing into surplus.[13] Thus, when commercial banks and bond investors cut off credit to highly leveraged US households in 2007-08, a narrowing of surpluses in East Asia, especially China, and those of oil-exporting countries allowed a substantial narrowing of the US current account deficit. In contrast, after commercial banks cut off borrowers in peripheral Europe in 2011-12, the current account of neither core Europe nor the euro zone outside the euro area accommodated peripheral Europe's swing from deficit to surplus. As a result, the euro zone's current account swung into an unprecedented surplus of one-half of one percent of world GDP.

3.2 Currency zone investment positions

Deriving in like fashion net investment positions for currency zones,[14] we find a dollar zone position that reinforces the message above of near balance in the dollar zone current account in 2007. Valuation effects apart, current account balances cumulate into net investment positions. Net investment positions – stocks rather than flows – matter because portfolio theory points to the interaction of home bias and the distribution of wealth. Even as the dollar zone ran a balanced current account in the mid-2000s, a large international investment *liability* could have left it vulnerable to changes in investors' expectations.

[13] Gruber and Kamin (2007) use a crisis dummy to explain the post-1997 widening of current account surpluses in East Asia.

[14] See Appendix 3 for gross investment positions by currency zone.CUT? AGREE

We start by showing the conventional net investment positions of the same countries and country groups as above (Figure 6, based on Lane and Milesi-Ferretti (2001, 2007 and 2017)). Owing to current account deficits, the United States became a debtor country in 1985 (strictly speaking a country with net international investment liabilities, including equity positions). It has since unevenly accumulated larger net liabilities, which have reached over 10% of global GDP. As in Tille (2003), the US borrows dollars to invest in assets denominated in other currencies, so the depreciation of the dollar from 2002-10 reduced its net liabilities, despite ongoing deficits. The dollar's appreciation since then has boosted US liabilities. In aggregate, what became the euro area has been a debtor since German re-unification in the early 1990s, but euro area surpluses after the sovereign credit strains of 2011-12 have brought the position to near zero (Fidora and Schmitz (2018)).[15]

[Insert Figure 6 here]

To some extent, Japan's position has been a mirror image of that of the United States, as its creditor position has unevenly increased since the early 1980s. Oil exporters have been persistent creditors since the first oil shock of 1973, and their positions have increased, especially in the second half of the 2000s. China joined the creditor countries in the mid-2000s, but the scale of its position has not reached that of Japan.

Net investment positions look different on a zone basis for the dollar but not for the euro. The dollar's role as a funding currency for the rest of the world is evident in the dollar zone's negative international investment position in the mid-1970s and into the 1980s, even before the United States incurred net liabilities. More recently, we find that the dollar zone's net international investment position was approaching balance before the GFC, after a long deterioration in the 1980s and 1990s (Figure 7, panel a). This reflected not only the dollar effect

[15] Milesi-Ferretti et al (2010) suggests that systematic undercounting of euro area holdings of portfolio equity (ie, mutual funds) in Luxembourg and Ireland result in understatement of the euro area international investment position.

just alluded to, but also the rapid growth of China's net international assets. Thus, around the GFC, economies with currencies that were relatively stable against the dollar in Asia and the Middle East had net international *asset* positions that offset the US net international *liability*. The dollar zone's net investment position offers another piece of evidence that the emphasis on global imbalances at the national level before the GFC might well have been misplaced.

[Insert Figure 7 here]

The dollar zone provides a new perspective on the evolution of international asset positions in the crisis year of 2008. Against economist's predictions, the outbreak of the acute phase of the GFC saw the dollar appreciate sharply (McCauley and McGuire (2010)). This caused the US net international liabilities to balloon (Benetrix et al (2015), providing what Gourinchas et al (2010) call insurance in times of stress. A key observation in Figure 7 is that the US position deteriorates in 2008 (blue bar lengthens) by more than that of the dollar zone (decline in black line). The difference shows that members of the dollar zone receive much of the payout on the US disaster insurance. For instance, the appreciation of the price of US Treasury bonds in 2008 lifted the value of China's reserve assets.

Since 2010, the US and dollar zone have seen parallel developments. With the levelling off of China's surplus after the GFC, the deterioration in the US net international position between 2010 and 2016 has found reflection in the dollar zone net investment position.

While the US and dollar zone positions generally differ, the euro zone' position differs little from that of the euro area proper. Both have approached balance. In effect, Norway's creditor position is more or less balanced against net liabilities in central and eastern Europe and elsewhere.

3.3 Outlook for currency zone current accounts

Looking forward, the IMF's April 2018 projections of current accounts, along with unchanged currency zone weights, imply that the dollar zone's current account is on a sharply downward

path to 2023. This outcome reflects a projected modest widening of the US current account deficit at the centre of the dollar zone. It also reflects a progressive narrowing of mainland China's and a disappearance of Southeast Asia's current account surpluses. Oil exporters, which, other than Russia and Norway, are mostly in the euro zone, are projected to enjoy a near-term widening, but then a narrowing of their surpluses, as the price of oil subsides and spending catches up with revenues. Taken together, these projections take the dollar zone's projected current account deficit to a share of world GDP last seen in the early 2000s (Figure 8).

For its part, the euro zone current account surplus is projected to continue to widen through 2019, before narrowing slightly into 2023. It bears emphasis that the euro zone surplus at over a half percent of global GDP is far wider than the equivalent surpluses with the Deutsche mark zone or in the early years of the euro. The yen-zone (essentially the Japanese) current account surplus is forecast to dwindle over time from a quarter of a percent of global GDP.

Thus, in a few years we may look back on the period when the dollar zone current account was near balance around the GFC as exceptional. *If* the IMF's projections prove accurate and *if* currency zones are stable, dollar zone and euro current accounts could figure in the dynamics of the dollar/euro exchange rate as they mostly have not since the euro's introduction.

[Insert Figure 8 here]

4 Decomposing global imbalances: across vs within zones

This section decomposes global current accounts into those across zones and those within zones. This decomposition exposes two widely accepted propositions as half-truths.

The first is that, at least before the GFC, home bias constrained global portfolios less over time and that, as a result, the dispersion of current accounts had grown. Greenspan (2003) famously mused that an "expanding universe" of portfolios subject to decreasing home bias

had made it far easier for countries to finance current account deficits. Faruqee and Lee (2009) confirmed that the dispersion of current accounts had been trending higher. In particular, they found that in the 45 years, 1960-2005, the sum of absolute values of current accounts as a ratio of global GDP had risen from 1.5% to over 5% (Figure 9, solid blue line). For the data through 2008, the trend line (dashed blue line) suggests that aggregate current accounts increased at the rate of 0.88% of global GDP per decade (*p*-value 0.000).

[Insert Figure 9 here]

The proposition was correct, but only a half-truth. There was hardly any trend towards wider imbalances *across* currency zones. On Figure 9 the red line shows the sum of the absolute values of currency zone current accounts as a share of global GDP. These show a statistically insignificant trend at the rate of only 0.065% per decade (*p*-value 0.191). Since the Bretton Woods era, investors have not been taking on progressively larger currency risks with dollar/euro, dollar/yen and euro/yen positions. Instead, the expanding universe seemed confined to positions *within* the dollar and euro zones. For instance, into 2005, China could accumulate US Treasury securities with little apparent currency risk.

The other proposition revealed as half-true is that global imbalances have trended down since the GFC. We have updated Faruqee and Lee (2009) through 2016, and the data show a sharp contraction in aggregate current accounts since 2006. Over the last ten years aggregate current account imbalances have trended down at the rate of 1.54% per decade. This trend has seemed to support the idea that global imbalances have diminished

From the perspective of currency zone current accounts, however, current account imbalances have not improved since 2006. If anything, there is a trend towards larger absolute values of cross-zone imbalances. The global imbalances that require positions with greater currency risk have not decreased since the GFC.[16]

[16] The Japanese public sector has taken on much of the foreign currency exposure from Japan's current accounts, both in the form of official foreign exchange reserves and the government pension fund. Similarly, the Norwegian

The divergent trends reflect zone bias in portfolios, as shown in BIS international banking and international securities data. In particular, dollar zone investors do favour the dollar in investing and borrowing abroad. [FOLLOWING MATERIAL NEEDS WORK]

That portfolios line up with currency zone membership is evident in the limited national data on official foreign exchange holdings and in broader available data on international bank deposits and loans as well as on international bond issuance. For 25 economies that disclose at least the US dollar share of official foreign exchange reserves, the co-movement with the dollar of the respective domestic currency accounts for two thirds of the variation in the dollar share of reserves (Figure 10). Thus, dollar zone economies in Latin America and East Asia mostly accumulate dollar reserves. Euro zone economies hold lower shares of dollars in their reserves.

[Insert Figure 10 here]

For broader samples covering all sectors, the co-movement of domestic currencies with the dollar lines up with the currency composition of external assets and liabilities. In particular, dollar zone membership lines up with the dollar share of cross-border holdings of bank deposits (Figure 11, left-hand panel), of the dollar share of cross-border bank loans (centre panel) and the dollar share of international bonds outstanding (right panel).

[Insert Figure 11 here]

Why are these relationships so strong? One interpretation is that investing and borrowing in the key currency of one's zone leads to a lower variance of returns, whether on assets or liabilities. Zone bias economises on currency risk.

5. The renminbi as a key currency?

As noted above, several studies have investigated whether the renminbi is becoming a key currency in the sense of attracting currencies that share its movements against major currencies.

pension fund has taken on the bulk of Norway's long foreign exchange position arising from its oil-fed current account surpluses.

The end-November 2015 IMF decision to include the renminbi in the SDR as of October 2016 added motivation to such studies. Moreover, the reform of the renminbi's daily fixing in August of 2015 took an important step in the lead-up to that decision. Evidence points to its having marked a break point, with a greater degree of co-movement observed after then (McCauley and Shu (2018)). Can the evidence to date provide some preliminary indication of the effect of the renminbi on key currency geography and thereby on the key currency view of global imbalances?

There are good reasons to judge that it is too soon to tell. The renminbi remains tethered to the dollar on a daily basis. Its annualized volatility remains in the low single digits, as opposed to the high single digits or double-digits of euro/dollar and yen/dollar. In the 2016 Triennial Survey of Foreign Exchange Turnover, the renminbi's share of turnover of 4% still lagged considerably behind not only that of the dollar and the euro but also the yen (22%), sterling (13%) and even the Australian dollar (6%). On this view, consideration of the renminbi as a de facto key currency should wait until the results of the 2019 or even the 2022 survey.[17]

That said, this section reports the result of a change in our prior from three key currencies to four. What effect might this change exert on the size of the dollar zone and its current account? It must be emphasized at the outset that in part the exercise answers the question by assumption in the treatment of the renminbi as a key currency. This removes Chinese GDP and its current account from the dollar or euro zones. The more interesting part of the answer is the GDP or current account of third countries that leave the dollar or euro zones and join the renminbi zone.

Based on 2015-17 exchange rates, neighbouring and commodity currencies share most of the renminbi's movements against the dollar. On the assumption that the renminbi is a key

[17] IMF (2015) found that the renminbi lagged on share of international bank deposits and bonds as well.

currency, this can be interpreted as suggesting a sizeable renminbi zone. We join Tovar and Nor (2018) in extending the analysis beyond Asian currencies. We find that not only major Asian currencies like the Korean won, Taiwan dollar, Indian rupee, and Indonesian rupiah but also commodity currencies. These include the Brazilian real, the Colombian and Mexican pesos and the South African rand, as well as many minor Asian and African currencies for a total of 24 such currencies. Tovar and Nor (2018) find 29 currencies co-moving with the renminbi, but characterise it as not an East Asian grouping but rather grouping around the BRICS. We find a an important if not exhaustive Asian grouping and do not find that the Russian rouble belongs.

[Insert Figure 12 here]

Two qualifications should be added here. First, the August 2015 observations figure prominently in this result. Recall that then, the Chinese authorities reformed the renminbi's daily fixing, with the result that the largest monthly change to that date occurred. Emerging market currencies tracked the renminbi lower then. However, this is not an outlier to be discarded, since the renminbi move represented an autonomous policy move to which other currencies responded. Second, and more tellingly, in other months the daily fixing of the renminbi/dollar rate was to a varying extent offsetting effective movements of the renminbi arising from dollar appreciation or depreciation (McCauley and Shu (2018)). We control for two of the largest source of movements of the effective dollar, the euro/dollar and yen/dollar, but other currencies consequently have a two-way relationship with the renminbi. For instance, sterling's fairly high beta on the renminbi likely reflects two-way influence.

Altogether the GDP share of the renminbi zone in 2017 is about 30% of global GDP at market prices (Figure 13). This compares to Tovar and Nor (2018) at 15.4%, using a variant of Frankel Wei. On the 2015-17 evidence, at least, the renminbi zone comes more at the expense of the dollar zone (-20%) than of the euro zone (-5%). Taking this evidence at face value, one

can join Tovar and Nor (2018) in concluding that an unequal bipolar world is giving way to an unequal tripolar world.

[Insert Figure 13 here]

Looking forward, with 2017 weights, the share of the renminbi zone would grow through 2023 to reach the diminishing share of the dollar zone. This projection is not based on any "market share" gain by the renminbi, but rather on the logic of uneven growth: compare China's GDP share with that of the United States.

Turning now to the current accounts in this tripolar world, on the evidence from 2015-17, at least, the dollar zone current account would resemble the US current account of dollar and RMB zones.

[Insert Figure 14 here]

6. Conclusions

International finance, in general, and global imbalances in particular, look different when the key currencies rather than economies are taken to be the unit of analysis. Contrary to the very wide, and to many worrisome, US current account deficit in the mid-2000s, we have shown that the dollar zone current account was near balance. Countries whose currencies co-moved with the dollar, whose investors therefore saw dollar investments as posing relatively low exchange-rate risk, were running current account surpluses that offset the US deficits.

Looking forward, IMF projections imply that the dollar zone will return to the sizeable deficits that were last seen in the mid-1980s. On this view, the dollar zone current account deficit would be larger than it has been since the euro came into existence 20 years ago.

On current evidence, if the renminbi becomes a key currency, it would carry a substantial share of global GDP out of the dollar zone. This would leave the dollar zone deficit all the wider.

Acknowledgements

The authors thank Joshua Aizenman, Agustin Bénétrix, Claudio Borio, Menzie Chinn, Gian Maria Milesi-Ferretti, Arnaud Mehl and Martin Schmitz, as well as participants in seminars at the Asian Development Bank Institute and the BIS for discussion and Tracy Chan and Alan Villegas for research assistance. This paper was conceived when Ito was visiting the BIS as a research fellow. The views expressed are those of the authors and not necessarily those of Portland State University or the BIS.

Appendix 1: Country list (172 economies)

China

Japan

United Kingdom

United States

Euro Area countries

Austria

Belgium

Cyprus (2008-)

Estonia (2011-)

Finland

France

Germany

Greece (2001-)

Ireland

Italy

Latvia (2014-)

Lithuania (2015-)

Luxembourg

Malta (2008-)

Netherlands

Portugal

Oil Exporters

Algeria

Angola

Bahrain

Brunei

Congo, Rep.

Gabon

Iran, Islamic Rep.

Iraq

Libya

Nigeria

Norway

Oman

Qatar

Saudi Arabia

Trinidad and Tobago

Turkmenistan

United Arab Emirates

Venezuela, RB

Other Countries

Afghanistan

Croatia

Djibouti

Dominica

Dominican Republic

Ecuador

Egypt, Arab Rep.

El Salvador

Equatorial Guinea

Eritrea

Ethiopia

Fiji

Gambia, The

Georgia

Ghana

Grenada

Guatemala

Guinea

Guinea-Bissau

Guyana

Haiti

Honduras

Panama

Papua New Guinea

Paraguay

Peru

Poland

Romania

Russian Federation

Rwanda

Sao Tome and Principe

Samoa

Senegal

Seychelles

Sierra Leone

Solomon Islands

South Africa

Sri Lanka

Sudan

Suriname

Swaziland

Syrian Arab Republic

Tajikistan

San Marino

Slovakia (2009-)

Slovenia (2009-)

Spain

Other advanced economies

Australia

Canada

Denmark

Cyprus

Estonia

Greece

Iceland

Israel

Latvia

Lithuania

Malta

Slovakia

Slovenia

United Kingdom

Emerging Asia

Hong Kong

Indonesia

Albania

Antigua and Barbuda

Argentina

Armenia

Aruba

Azerbaijan

Bahamas, The

Bangladesh

Barbados

Belarus

Belize

Benin

Bhutan

Bolivia

Botswana

Brazil

Bulgaria

Burkina Faso

Burundi

Cote d'Ivoire

Cambodia

Cameroon

Hungary

Jamaica

Jordan

Kazakhstan

Kenya

Kiribati

Kuwait

Kyrgyz Republic

Lao PDR

Lebanon

Lesotho

Liberia

Madagascar

Malawi

Maldives

Mali

Mauritania

Mauritius

Mexico

Micronesia, Fed, States

Moldova

Mongolia

Tanzania

Togo

Tonga

Tunisia

Turkey

Uganda

Ukraine

Uruguay

Vanuatu

Yemen, Rep.

Zambia

Zimbabwe

India	Cape Verde	Morocco
Korea	Central African Republic	Mozambique
Malaysia	Chad	Myanmar
Philippines	Chile	Namibia
Singapore	Colombia	Nepal
Taiwan	Comoros	Nicaragua
Thailand	Congo, Dem. Rep.	Niger
Vietnam	Costa Rica	Pakistan

Appendix 2: Data descriptions and sources

Current account balances – Data are extracted from the IMF's *World Economic Outlook, International Financial Statistics*, and the World Bank's *World Development Indicators*.

Nominal GDP – Data are extracted from the IMF's *World Economic Outlook* and the World Bank's *World Development Indicators*.

Currency weights – Estimated as explained in the text with moving 36-month rolling regressions, using monthly data from the IMF's *International Financial Statistics*. Outliers observed for the estimated $\hat{\beta}_{iht}$ due to financial or macroeconomic turbulences are deleted on a monthly basis. Any significantly negative $\hat{\beta}_{iht}$ is assumed to be a missing estimate and a statistically insignificant negative $\hat{\beta}_{iht}$ is replaced with a value of zero. Likewise, any $\hat{\beta}_{iht}$ that is significantly no greater than the value of one is replaced with the value of one, while $\hat{\beta}_{iht}$ significantly greater than one is replaced with a missing variable. Once outliers are removed and some estimates are replaced on a monthly basis, they are annually averaged to create annual data series.

References

Avdjiev, S, R McCauley and H Shin (2016): "Breaking free of the triple coincidence in international finance", *Economic Policy*, vol 31, issue 87, July, pp 409-51.

Bank for International Settlements (2014): *84th Annual Report*, June.

Bank for International Settlements (2015): *85th Annual Report*, June.

Bénassy-Quéré, A, B Coeuré and V Mignon (2006): "On the identification of de facto currency pegs", *Journal of the Japanese and International Economies*, vol 20, pp 112–27.

Bénétrix, A, P Lane and J Shambaugh (2015): "International currency exposures, valuation effects and the Global Financial Crisis", *Journal of International Economics*, vol 96, pp S98–S109.

Bernanke, B (2005): The global saving glut and the U.S. current account", Sandridge Lecture, Virginia Association of Economics, Richmond, VA, 10 March.

Borio, C (2016): "More pluralism, more stability?" speech to Seventh high-level SNB-IMF conference on the international monetary system, Zurich, 10 May.

Borio, C and P Disyatat (2011): "Global imbalances and the financial crisis: link or no link?" BIS Working Paper 346.

——— (2015): "Capital flows and the current account: taking financing (more) seriously", *BIS Working Papers*, no 525, October.

Broner, F, T Didier, A Erce and S L Schmukler (2013): "Gross capital flows: dynamics and crises," *Journal of Monetary Economics*, vol 60, pp 113-133.

Bruno, V and H S Shin (2013): "Capital flows, cross-border banking and global liquidity," NBER Working Paper 19038.

Calderón, C and M Kubota (2012): "Gross inflows gone wild: gross capital inflows, credit booms and crises," World Bank *Policy Research Working Paper* 6270.

Catão, Luis A V and G M Milesi-Ferretti (2013): “External liabilities and crises,” IMF Working Paper 13/113.

Dooley, M, D Folkerts-Landau and P Garber (2004): "The revived Bretton Woods System", *International Journal of Finance and Economics,* vol 9, no 4, October, pp 307-313.

Drummond, I (2008): *The floating pound and the sterling area: 1931–1939*, Cambridge University Press.

Edwards, S (2005): “Is the U.S. current account deficit sustainable?” *Brookings Papers on Economic Activity* 1, p. 211-271.

Eichengreen, B and D Lombardi (2017): “RMBI or RMBR? Is the renminbi destined to become a global or regional currency?” *Asian Economic Papers*, vol 16(1), pp 35–59.

Faruqee, H and J Lee (2009): “Global dispersion of current accounts: is the universe expanding?” IMF *Staff Papers,* vol 56, pp 574–595.

Fidora, M and M Schmitz (2018); “Factors driving the recent improvement in the euro area’s international investment position”, ECB Economic Bulletin, no 3,

Forbes, K J and F E Warnock (2012): “Capital flow waves: surges, stops, flight, and retrenchment,” *Journal of International Economics*, vol 88(2), pp 235-251.

Frankel, J and S-J Wei (1996): “Yen bloc or dollar bloc? Exchange rate policies in East Asian economies”, in T Ito and A Krueger (eds), *Macroeconomic linkage: savings, exchange rates, and capital flows*, University of Chicago Press, pp 295–329.

Fratzscher, M and A Mehl (2014): "China’s dominance hypothesis and the emergence of a tri-polar global currency system", Economic Journal, vol 124 (no 581), pp 1343–1370.

Gourinchas, P-O, H Rey and N Govillot (2010): "Exorbitant privilege and exorbitant duty", *IMES Discussion Paper Series* 10-E-20, Institute for Monetary and Economic Studies, Bank of Japan.

Gopinath, G and J Stein (2018): "Banking, trade, and the making of a dominant currency," NBER Working Paper Series #24485. Cambridge, MA: NBER.

Goldberg, L (2011): "The international role of the dollar: does it matter if this changes?" Federal Reserve Bank of New York *Staff Report*, no 522, October.

Greenspan, A (2003): ''Current account,'' presentation at the 21st Annual Monetary Conference, cosponsored by the Cato Institute and *The Economist*, Washington www.federalreserve.gov/boarddocs/speeches/2003/20031120/default.htm.

Gruber and S Kamin (2007): "Explaining the global pattern of current account imbalances", *Journal of International Money and Finance*, vol. 26, issue 4, pp 500-522.

Haldane, A and S Hall (1991): "Sterling's relationship with the dollar and the Deutschemark: 1976–89", *Economic Journal*, vol 101, no 406, May.

Hatase, M and M Ohnuki (2009): "Did the structure of trade and foreign debt affect reserve currency composition? Evidence from interwar Japan", Bank of Japan Institute for Monetary and Economic Studies, Discussion Paper Series, 2009-E-15.

Hofmann, B and B Bogdanova (2012): "Taylor rules and monetary policy: a global 'Great Deviation'?" *BIS Quarterly Review*, September, pp 37-49.

Hofmann, B and E Takáts (2015): "International monetary spillovers", *BIS Quarterly Review*, September, pp 105-118.

International Monetary Fund (2015): "Review of the method of valuation of the SDR: Staff report", 13 November 2015.

International Monetary Fund (2018): *World Economic Outlook.* Washington, D.C.: International Monetary Fund, April.

Ilzetzki, E, C Reinhart, and K Rogoff (2017): "Exchange rate arrangements in the 21st Century: which anchor will hold?" NBER Working Paper no 23134, February.

Ito, H and M Kawai (2016): "Trade invoicing in major currencies in the 1970s-1990s: lessons for renminbi internationalization," *Journal of the Japanese and International Economies*, vol 42, December, pp 123–145.

Ito, H, R McCauley and T Chan (2015): "Emerging market currency composition of reserves, denomination of trade and currency movements", *Emerging Markets Review*, December, pp 16-19.

Ito, T (2017): "A new financial order in Asia: will a RMB bloc emerge?" *Journal of International Money and Finance*, vol 74, June, pp 232-257.

Kawai, M and S Akiyama (1998): "The role of nominal anchor currencies in exchange rate arrangements", *Journal of the Japanese and International Economies*, vol 12, pp 334–87.

——— (2000): "Implications of the currency crisis for exchange rate arrangements in emerging East Asia", World Bank *Policy Research Working Paper* no 2502.

Kawai, M and V Pontines (2016): "Is there really a renminbi bloc in Asia?: A modified Frankel–Wei approach," *Journal of International Money and Finance*, vol. 62(C), pp 72-97.

Kohlscheen, E, F Avalos and A Schrimpf (2017): "When the walk is not random: commodity prices and exchange rates", *International Journal of Central Banking*, vol 13, no 2, June, pp 121-58.

Krugman, P (2007): "Will there be a dollar crisis?", *Economic Policy*, vol 22, no 51, pp 436–67.

Lane, P and G-M Milesi-Ferretti (2001): "The external wealth of nations: measures of foreign assets and liabilities for industrial and developing countries", *Journal of International Economics*, vol 55, pp 263–294.

——— (2007): "The External Wealth of Nations Mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004", *Journal of International Economics*, vol 73, no 2. pp 223−250.

_____ (2017): "International financial integration in the aftermath of the Global Financial Crisis", International Monetary Fund *Working Paper* no 17/115, 10 May.

Ma, G and R McCauley (2011): "The evolving renminbi regime and implications for Asian currency stability", *Journal of the Japanese and International Economies*, vol 25, no 1, pp 23-38.

Marconi, D (2017): "Currency co-movements in Asia-Pacific: the regional role of the renminibi", BOFIT Discussion Papers, no 10, 12 June.

McCauley, R (2015): "Does the US dollar confer an exorbitant privilege?" *Journal of International Money and Finance*, vol 57, pp 1-14.

_____ (1997): *The euro and the dollar*, Princeton University Essays in International Finance, no 205, November.

McCauley, R, A Bénétrix, P McGuire and G von Peter (2017): "Financial deglobalisation in banking?", BIS *Working Papers* no 650, June.

McCauley, R and T Chan (2014): "Currency movements drive reserve composition", *BIS Quarterly Review*, December, pp 23-36.

McCauley, R and P McGuire (2009): "Dollar appreciation in 2008: safe haven, carry trades, dollar shortage and overhedging", *BIS Quarterly Review*, December, pp 85-93.

McCauley, R and C Shu (2018): "Recent renminbi policy and currency co-movements", *Journal of International Money and Finance*.

Milesi-Ferretti, G-M; N Tamirisa, and F Strobbe (2010): "Bilateral financial linkages and global imbalances: a view on the eve of the financial crisis", IMF *Working Paper* no 10/257, 1 November 2010.

Obstfeld, M (2012): "Does the current account still matter?" *American Economic Review: Papers & Proceedings*, vol 102, no 3, pp 1–23.

Obstfeld, M and K Rogoff (2005): “Global current account imbalances and exchange rate adjustments,” *Brookings Papers on Economic Activity* 1, p. 67-123.

Rey, H (2013): “Dilemma not trilemma: the global financial cycle and monetary policy independence”, paper presented to the Federal Reserve Bank of Kansas City Jackson Hole Symposium, August.

Schenk, C (2009): “The evolution of the Hong Kong currency board during global exchange rate instability, 1967–1973”, *Financial History Review*, vol 16, pp 129–56.

——— (2010): *The decline of sterling: managing the retreat of an international currency*, 1945–1992, Cambridge University Press.

Schenk, C and J Singleton (2015): “The shift from sterling to the dollar 1965– 76: evidence from Australia and New Zealand”, *Economic History Review*, vol 68, pp 1154-1176.

Setser, B; and N Roubini (2005): “Our money, our debt, our problem”, *Foreign Affairs*, vol 84, no 4, Jul/Aug, pp 194-198.

Shin, H S (2012): “Global banking glut and loan risk premium,” *IMF Economic Review*, vol 60, no 2, pp 155-192.

Subramanian, A and M Kessler (2013): "The renminbi bloc is here: Asia down, rest of the world to go?", Working Paper 12-19, Washington, DC: Peterson Institute for International Economics.

Summers, L (2004): “The US current account deficit and the global economy”, Per Jacobsson Lecture, International Monetary Fund, October.

Tille, C (2003): “The impact of exchange rate movements on U.S. foreign debt*”, Current Issues in Economics and Finance*, vol 9, no 1, January.

Tovar, C and T Nor (2018): “Reserve currency blocs: a changing international monetary system?” *IMF Working Papers* no 18/20, 24 January.

Figure 1: Standard view of global imbalances by country, 1973-2023 (in percent of world GDP)

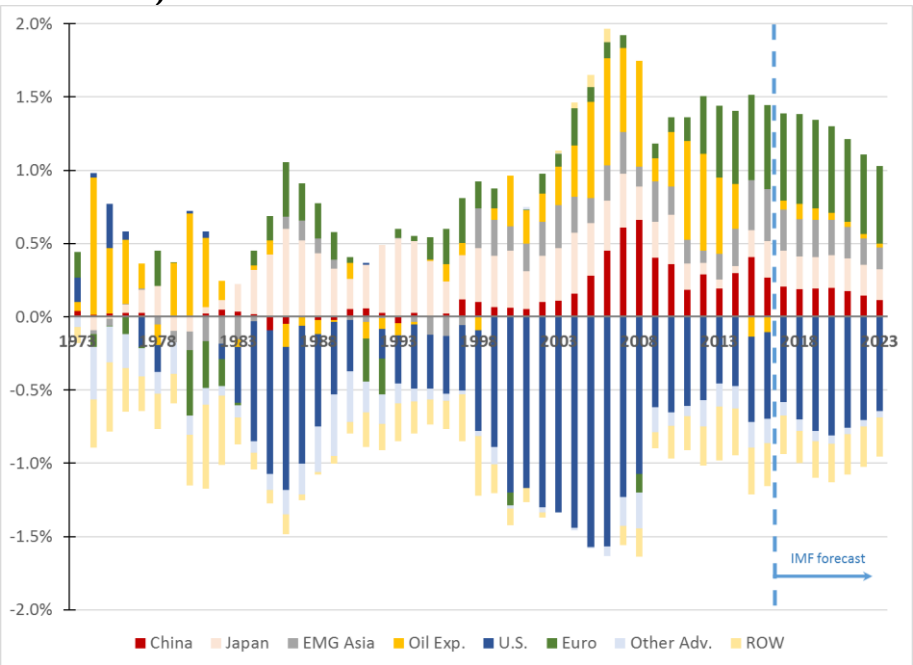


Figure 2: Euro (DM) weights for sterling and commodity currencies

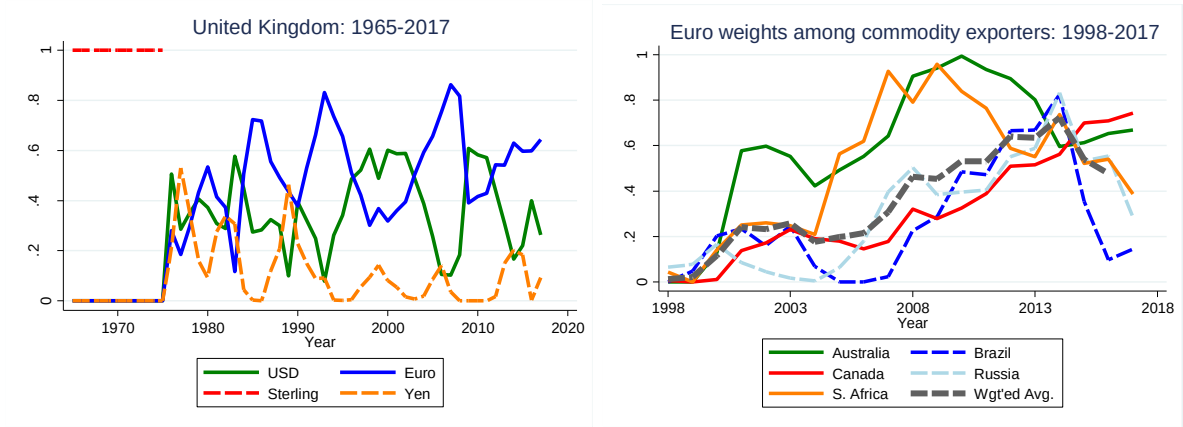
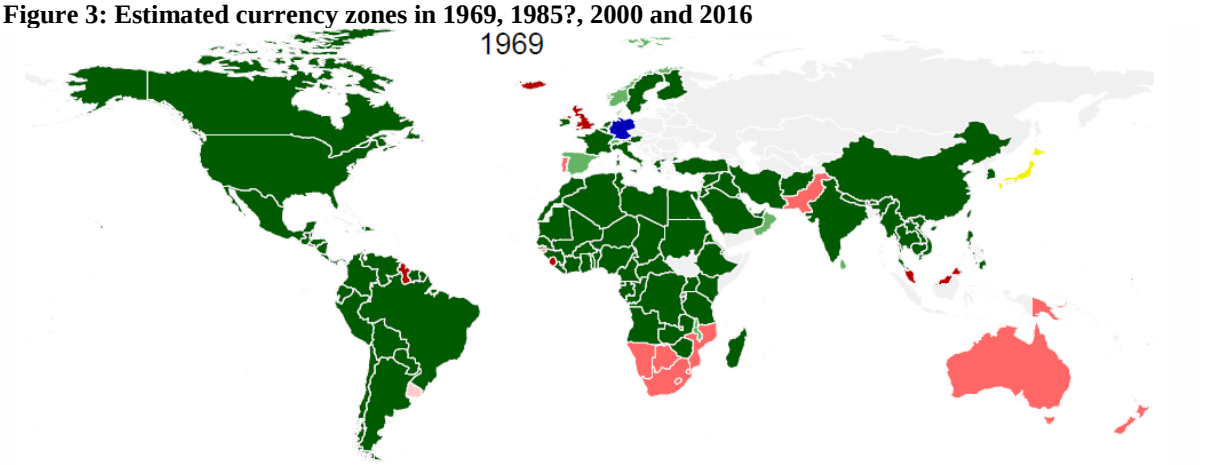
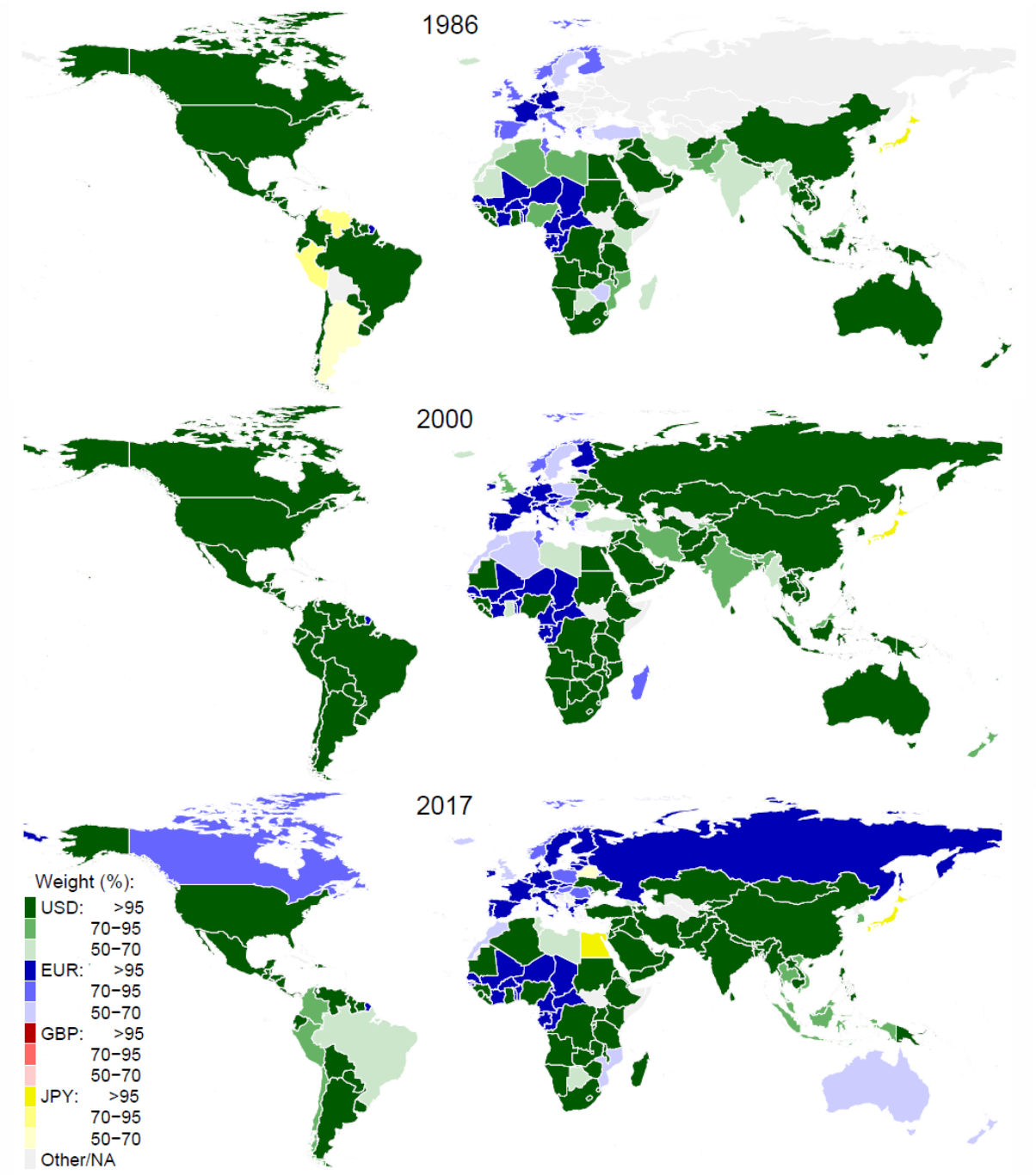


Figure 3: Estimated currency zones in 1969, 1985?, 2000 and 2016





The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the BIS.
Sources: IMF, International Financial Statistics; authors' estimates.

Figure 4: Currency zone and home share in global GDP: dollar and euro

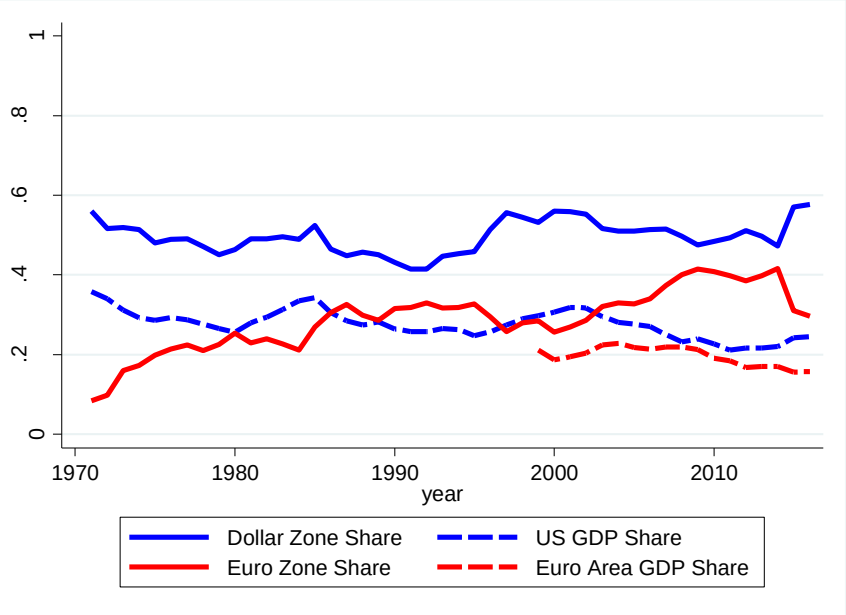
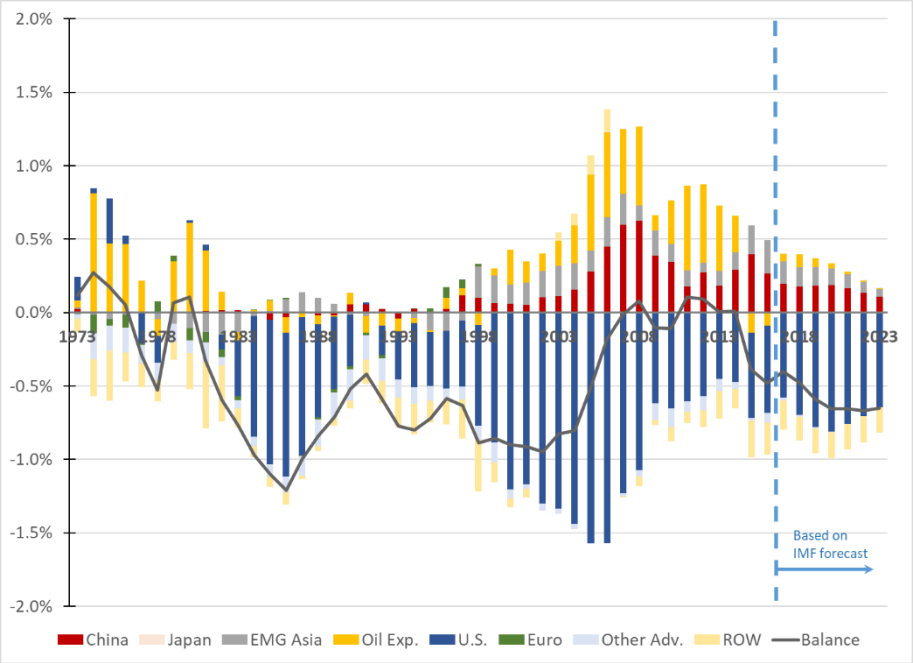
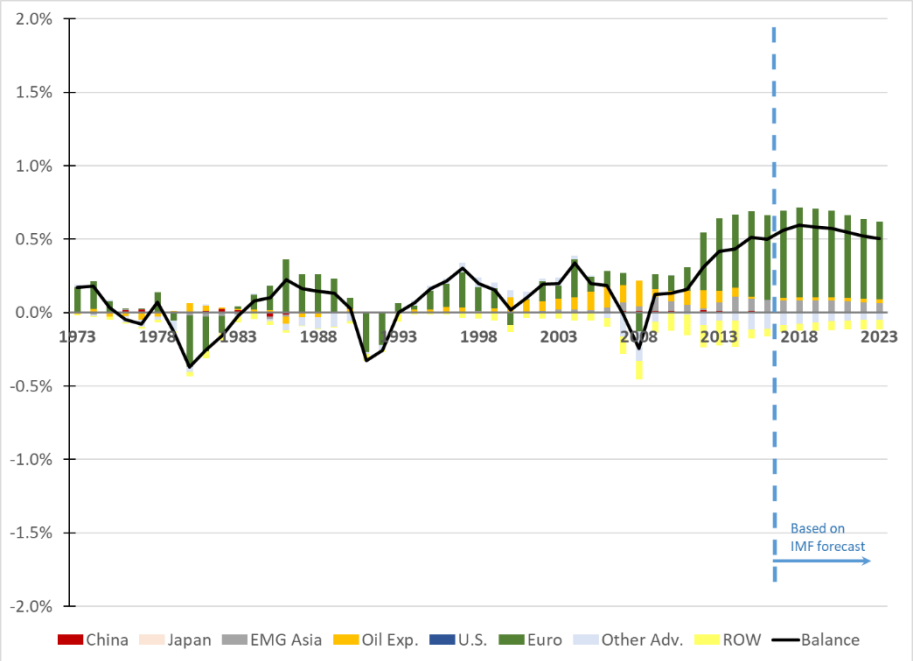


Figure 5: Current account balances for the key currency zones, 1973-2023 (In percent of world GDP)

(a) Dollar zone



(b) Euro zone



(c) Yen zone

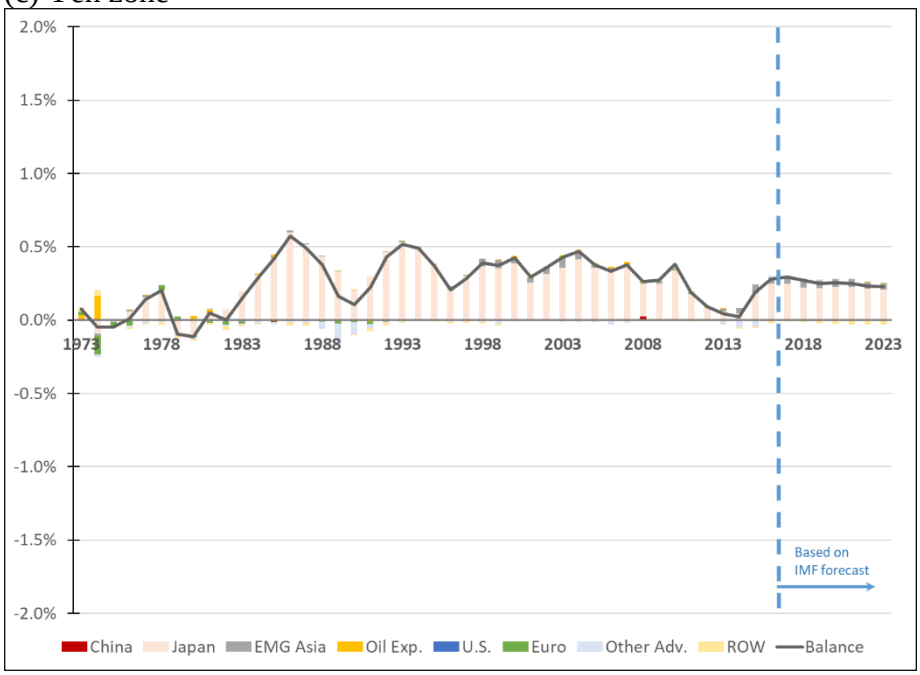
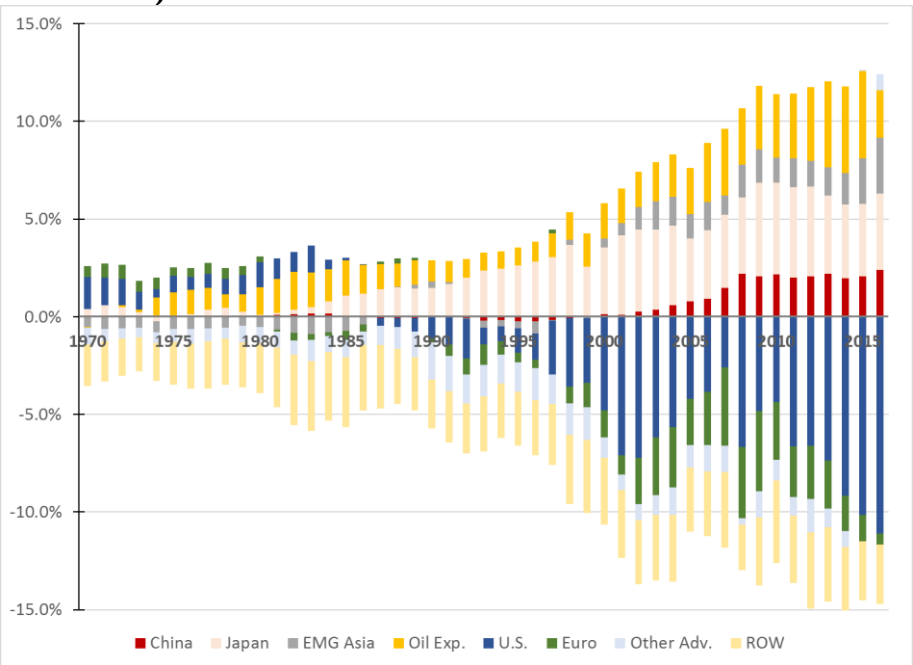


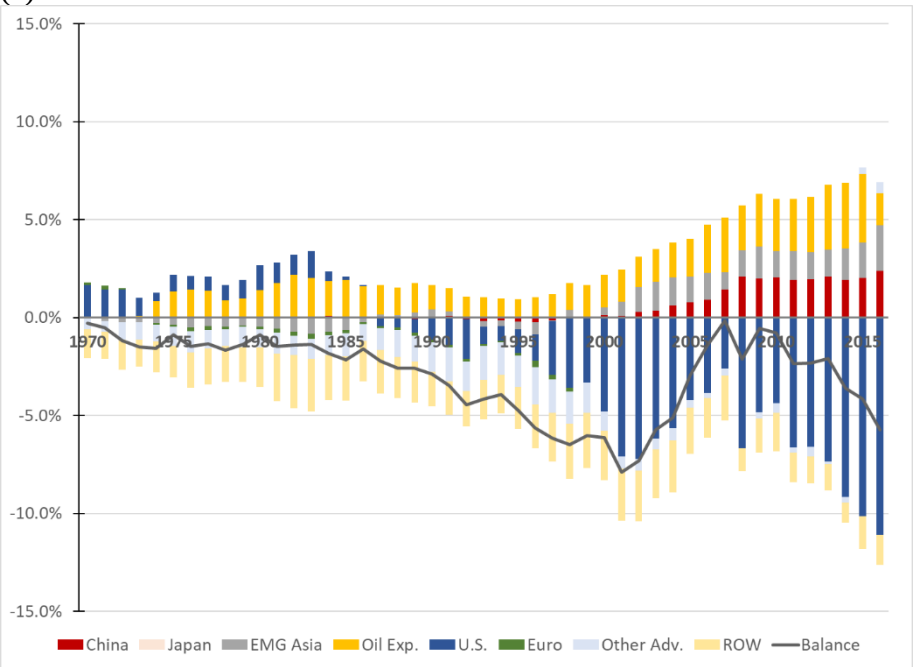
Figure 6: Net International Investment Position by Country, 1970–2016 (in percent of world GDP)



Sources: IMF, WEO.

Figure 7: Net Investment Position by Currency Zones, 1970-2016 (In percent of world GDP)

(a) Dollar zone



(b) Euro zone

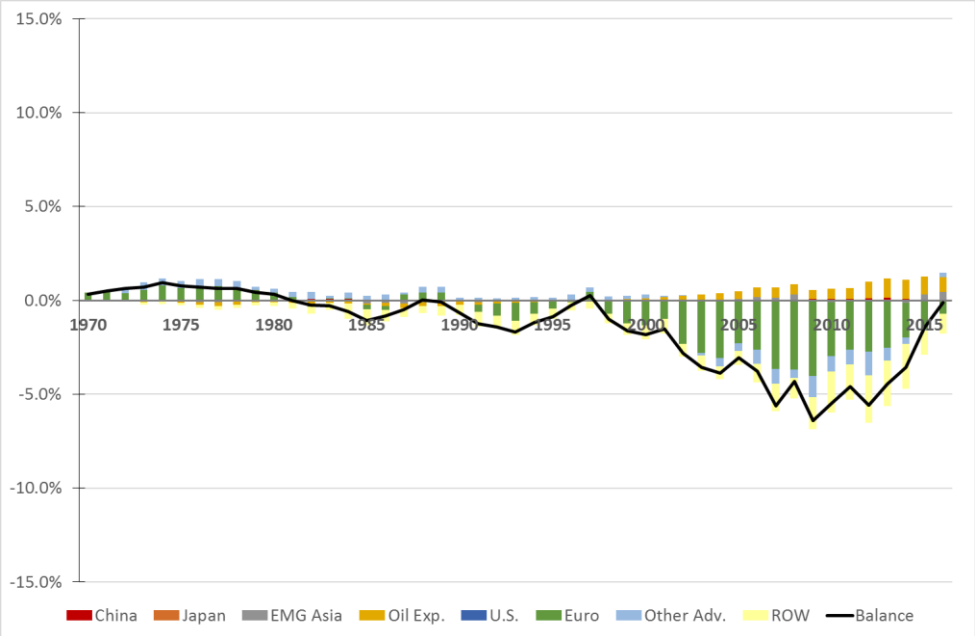
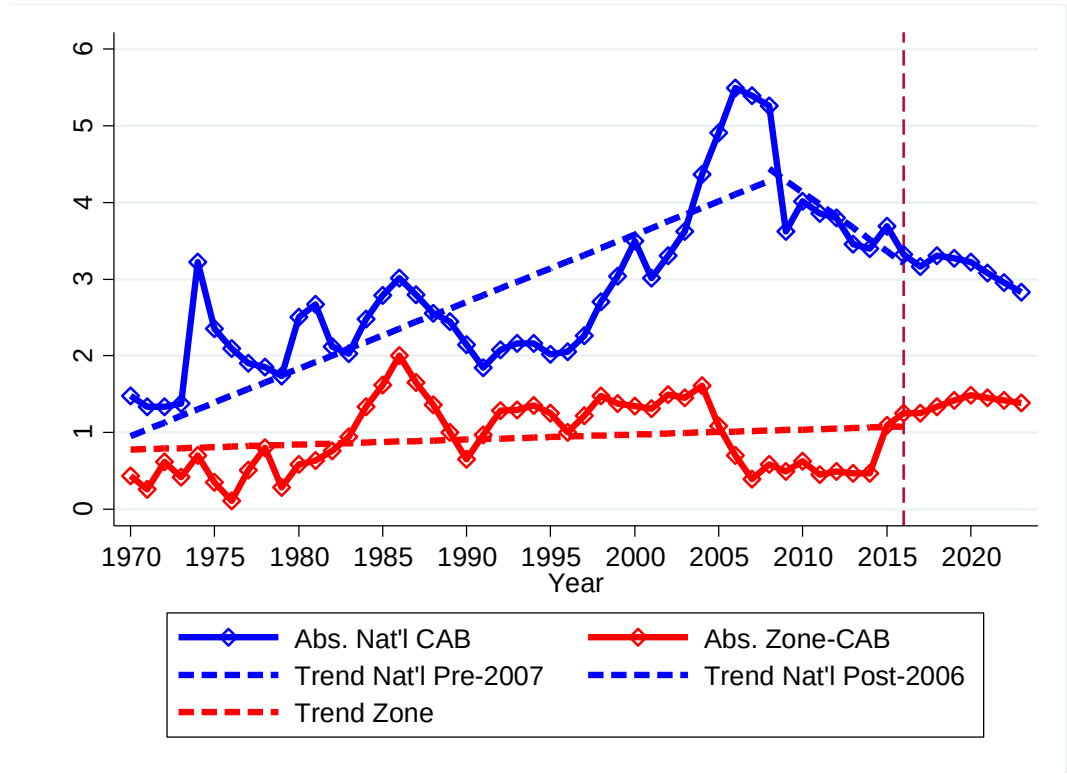


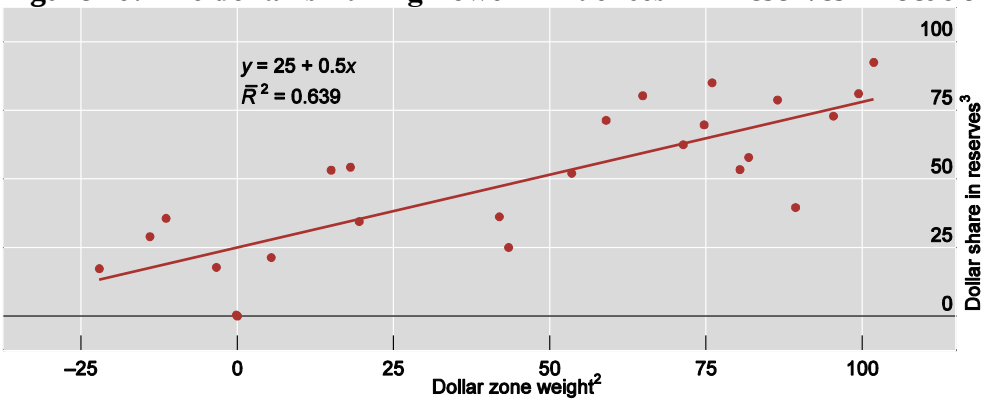
Figure 8: Currency Zone Current Account Balances, 1973-2023

Figure 9: Aggregate Current Account Imbalances (As a percent of world GDP)



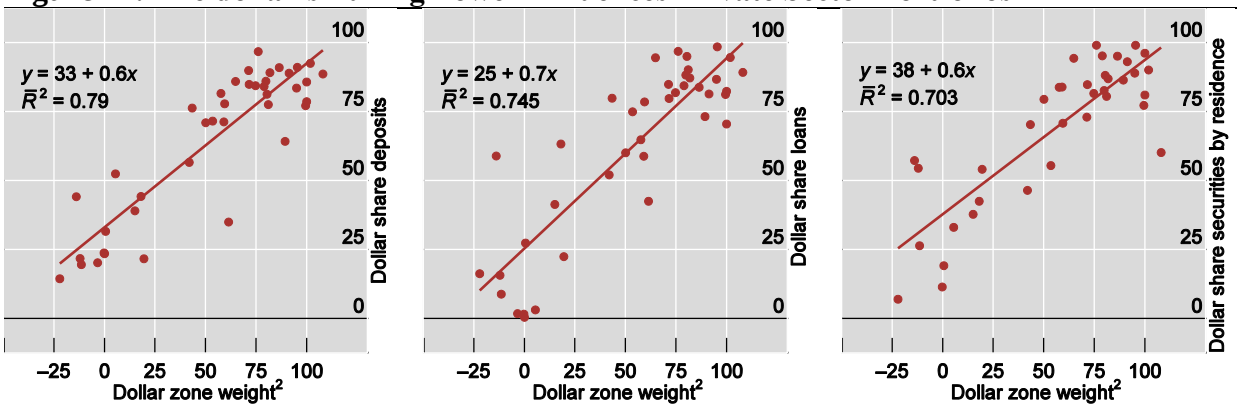
Sources: IMF, WEO and IFS; authors' calculations

Figure 10: The dollar's Pulling Power Influences FX Reserves Allocation[1]



Notes: [1] Country-specific dollar zone weights plotted against the dollar's share in the country's FX reserves, 2014. [2] Average over four years. [3] For Colombia, New Zealand, Philippines and Turkey, earlier data used.
Sources: National data; BIS calculations as compiled by McCauley and Chan (2014).

Figure 11: The dollar's Pulling Power Influences Private Sector Portfolios[1]



[1] Country-specific dollar zone weights plotted against the share of bank deposits, bank loans and residents' debt securities in the corresponding foreign currency totals, 2014. Includes the public sector. [2] Average over four years.

Sources: National data; BIS international debt securities; BIS locational banking statistics; BIS calculations.

Figure 12: Renminbi zone, 2015-17

[Ask Alan to draw RMB zone on the basis of spreadsheet I assume you want a world map like Fig. 3. The data are attached**]**

Figure 13: Currency zone and home share in global GDP: dollar, euro and renminbi

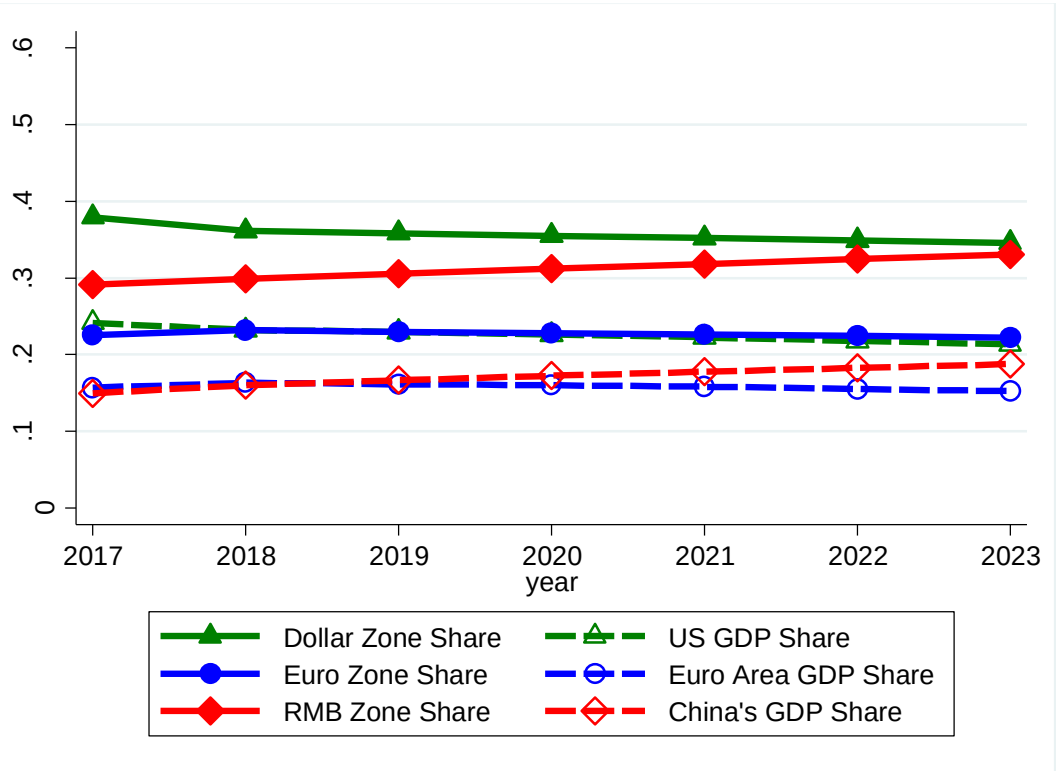


Figure 14: Currency zone current accounts with a renminbi zone, 2017-23