"The Once and Future Global Imbalances? Interpreting the Post-Crisis Record"

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September 6, 2017

Abstract

Global current account imbalances have reappeared, although the extent and distribution of these imbalances are noticeably different from those experienced in the middle of the last decade. What does that recurrence mean for our understanding of the origin and nature of such imbalances? Will imbalances persist over time? Informed by empirical estimates of the determinants of current account imbalances encompassing the period after the global recession, I find that – as before – the observable manifestations of the factors driving the global saving glut have had limited explanatory power for the time series variation in imbalances. Nonethelesss, fiscal factors have accounted for a noticeable share of the recent variation in imbalances, including in the US and Germany. Examining observable policy actions, it's clear that net official flows have been associated with some share of imbalances, although tracing out the motivations for intervention is difficult. Looking forward, it's clear that policy can influence global imbalances, although some component of the US deficit will likely remain given the US role in generating safe assets.

JEL No. F32,F41

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Acknowledgements: Paper presented at the Jackson Hole conference, August 2017. I thank the discussant Maury Obstfeld, participants at the Symposium, Matthieu Bussière, Joe Gagnon, Michael Klein, and Brad Setser, for comments. I also thank Hiro Ito for allowing me to draw on joint work and Joe Gagnon for providing data.

1. Introduction

In the first decade of the century, the nature and importance of expanding current account balances – both surpluses and deficits – dominated academic and policy debates. The onset of the global financial crisis, accompanied as it was by a compression of current account balances, sidelined the topic for several years. But as the global recovery has matured, the size of current account balances for certain countries has once again returned to the fore of discussion.[1] This brings up the obvious question of whether one needs to be concerned about the recurrence of such imbalances. In order to answer this question, one has to first address two issues: did the imbalances ever really go away, and did we expect those imbalances to shrink?

In one sense, it's clear that the imbalances – if they did not disappear, they at least took a short holiday. Figure 1, based upon April 2017 IMF *World Economic Outlook* projections, depicts current account balances for several somewhat arbitrary groupings, all expressed as a share of world GDP. One observation is that the sum of deficits, and sum of all surpluses has shrunk, so that in one sense, the degree of "imbalance" seems to be smaller in 2017 than one the eve of the global financial crisis. The total deficit was 2.8% of world GDP in 2006; in 2016, the corresponding estimated sum for the same groupings was 1.6% of world GDP. Admittedly imbalances rose in the immediate aftermath of the global recession. Yet even then, the extent of the imbalances are back to 2009 levels. Moreover, the degree of imbalance is projected to further shrink over time.

Examining the distribution of individual country balances, it appears that the dispersion has also narrowed. Figure 2 depicts the distribution of current account balances, expressed as a share of country GDP, for 2000, 2005, and 2015. Clearly, the frequency of larger (around 20%) deficits and surpluses increased by mid-decade. By the latest observation, the dispersion of current account balances had reverted, largely but not completely, back to 2000 levels. This point of comparison is apt to the extent that in all three cases, large parts of the world economy were at or near full employment.

A digression: besides sheer magnitude, what is a global imbalance? The terms of discussion here define it as a current account deficit or surplus or deficit sufficiently large and persistent to have global ramifications. Of course, the imbalances could alternatively refer to the lopsided distribution of cross-border assets and liabilities; in some sense, mismatches there pose

[1] E.g., "Global Imbalances, a Pre-Crisis Scourge, Are Back," *Economist*, October 26, 2016.

even greater threats to financial stability than do current account balances.[2] Imbalances could also refer to differential degrees of economic slack in various economic regions.

Traditionally, imbalances have referred to deficits and surpluses in the sense I've used; of course tradition is hardly sufficient. However, I think the focus on current account balances as the signifier of imbalances is merited because it fits in with the symposium's theme of Fostering a Dynamic Global Economy. The current account is tightly linked with the distribution of aggregate demand across regions of the world in a direct fashion.[3]

Closer inspection of the data reveal some fascinating patterns. First, returning to Figure 1, the composition of the imbalances has changed. The most striking of the changes is the virtual evaporation of oil exporter current account surpluses. In 2017, they are essentially nil, with a slight bounceback projected in the future. In addition, China's current account, as a share of world GDP, after reaching a local peak in 2015, has continued to shrink, and is projected to do so.

Second, what has remained the same? Even though China's share of the world current account has shrunk, the aggregate current account balance for East Asia (China plus Japan plus advanced Asia) has exhibited remarkable durability. The European creditor nations – mostly northern European countries, including Germany – have as a group also exhibited a sustained current account surplus more durable than that of the United States.

Perhaps one can take some comfort in the fact that the imbalances are projected to shrink. Cynics might say that it's the natural inclination to forecast reductions in the imbalances. As it turns out, the IMF's projections on the eve of the financial crisis (April 2008) did not uniformly overpredict contraction in global imbalances. As shown in Figure 3, the US deficit was predicted to shrink less than it actually did. Emerging Asia (using the 2008 definition, including China) was slated to have a current account balance in excess of 1% of world GDP in 2013. This is largely because China's current account balance turned out to be much smaller than projected. Why this is the case is attributable to a mixture of the global recession, which hit trade hard, and the assumption of a constant exchange rate; since March 2008, the CNY has appreciated by nearly a third.

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[2] Obstfeld (2012) argues that gross flows and asset positions are likely more important for financial stability by way of balance sheet mismatches and counterparty risk than the (relatively) small net flows represented by current account balances. See Lane and Milesi-Ferretti (2017) for an examination of the recent stall in the growth in cross-border assets and liabilities.

[3] I'm taking the current account as an approximation to the trade balance here; obviously, that is less true in these times when primary and secondary income accounts sometimes constitute large portions of the current account; see Forbes (2017).

One case where contraction of the current account surplus was forecasted, and did not occur, was in the euro area. As of 2013, the euro area current account balance was roughly 0.6 percentage points of world GDP larger than had been projected. Germany did not account for the majority of this disjuncture – maybe a little less than a quarter in 2013. What is true is that currently – just as in 2008 – the German current account is projected to shrink. To the extent that economic slack has largely disappeared, the parallel is remarkable.

Shrinking aggregate imbalances, forecasted convergence -- are these reasons to relax? What do these developments tell us about the nature of these imbalances? Consider the durability of two current account balances: the US and East Asia in aggregate. At the same time, the rotation of surpluses away from oil exporters and toward Germany and other northern European suggests that a one size fits all explanation – such as mercantilism, or a saving glut due to underdeveloped financial systems – is incomplete. In the end, a more prosaic explanation may be needed, one that relies upon special factors and timing.

In the next section, I recount the various explanations that have been forwarded for the development of global imbalances. The succeeding section evaluates the empirical evidence for each of these hypotheses, viewed through the lens of a cross-country analysis. Attribution of the various factors to driving imbalances is shown in the succeeding section. Finally, diverging from the formal model, I examine various policy options for dealing with imbalances, even only in a partial manner.

2. Theories Old and New

As current account imbalances widened in the early years of the 2000s, several competing hypotheses were forwarded. In considering the current state of affairs, it's helpful to recount what these arguments posited, and how they might apply in the current context.

The approaches could be loosely grouped into the following categories. The first explained current account imbalances as the outcome of optimizing behaviour, where countries with bright growth prospects or relatively high degrees of impatience, ran deficits. I'll call this the "textbook" view. The second viewed the imbalances largely through the lens of savings and investment balances, taking into account the role of the budget balance and demographics; the "twin deficits" interpretation – associated with the mid-1980s experience in the US – fits into this category. A third perspective ascribed the imbalances to the export focused tendencies of

(primarily) East Asian countries. Broadly speaking, this interpretation could be called the "mercantilist view". The "saving glut" view, most prominently associated with then Fed Governor Ben Bernanke, ascribed the imbalance to underdeveloped financial systems sending excess saving to the financial centers of the world. The "safe assets" perspective is a refinement of the saving glut argument. Saving flows to countries that serve as producers of high quality assets.

I briefly review these hypotheses in turn, placing them in the context of conditions understood to be in play at the time. The typology is necessarily broad-brushed, but at the same time each explanation should not be viewed as mutually exclusive.

2.1 The Textbook View

The intertemporal approach is the mainstay of the formal approach to explaining current account imbalances. Suppose one maximizes an intertemporal utility function subject to a budget constraint. If agents are not constrained by borrowing restrictions, and if they have rational expectations, then the agents should smooth consumption by borrowing and saving accordingly.

In this perspective, consumption today is to equal a share of the present discounted value of future expected net output, or net wealth. Hence, changes in consumption are due solely to changes in either the interest rate, or changes in expectations about future net output due to productivity shocks. The current account balances observed are optimal outcomes, and hence no concerns should arise; Obstfeld (2012) has called this the "consenting adults" view.[4]

What does this mean in the context of the question at hand? Suppose that in the early 2000's, there was a widespread belief productivity would boom in the future. Then rather than waiting for that anticipated productivity boom in the future to increase consumption, it makes sense for them to start consuming more now, so as to smooth consumption as much as possible. To consume more now means to import more and export less.

In this perspective, deficits signal future economic strength, something that seemed plausible given the late 1990's productivity acceleration. This argument would have been more convincing for the 2000s if GDP growth had been maintained by investment rather than consumption and, more importantly, if the lending to the United States had taken the form of purchases of stock and direct investment. Instead, a large proportion of capital flowing to the

[4] See more recent contextualization in Obstfeld (2017).

United States took place in the form of purchases of U.S. government securities. Moreover, the heavy involvement of foreign central banks in purchasing U.S. assets suggests that the profit motive was not behind the ongoing flows to the United States.[5]

Empirical analyses directed specifically at explaining imbalances in this context were rare. Some assessments investigated the current account dynamics for specific economies; Chinn and Lee (2009) applied a structural VAR approach, which allows for transitory and permanent shocks to drive the current account and the real exchange rate. The key identifying assumption is that the current account is stationary, while the real exchange rate is integrated of order one. Using the same approach as in Lee and Chinn (2006), they examine the US, the euro area and Japan, and found that a large share of the 2004-07 US current account is inexplicable using their model.[6]

One formal test of the intertemporal approach, as applied to the United States, was conducted by Engel and Rogers (2006). They model the current account as a function of the expected discounted present value of its future share of world GDP relative to its current share of world GDP (where the world is the advanced economies). The key difficulty in testing this approach is in modeling expected output growth; using a Markov-switching approach, they find that the U.S. is not keeping on a long-run sustainable path. However, using survey data on forecasted GDP growth in the G-7, their empirical model appears to explain the evolution of the U.S. current account remarkably well. Of course, the fact that current account behavior could only be rationalized by possibly irrational expectations is somewhat troubling. Furthermore, the analysis does not speak to the behavior of the economies on the other side of the ledger, i.e., the Chinas of the world.

2.2 Fiscal Policy and Demographics

Another key set of arguments regarding the origins of the imbalances of the 2000s relied upon the application of a conventional stories of current account –really trade – deficits, rooted in the experience of the 1980's. The combination of tax cuts and defense spending buildup resulted in an entirely predictable, largely contemporaneous, massive deterioration of the external balances.

[5] For an extensive critique of this perspective, see Chinn (2005).
[6] Some early formal analyses of the present value approach were conducted by Sheffrin and Woo (1990a, b).

The collision with contractionary monetary policy only exacerbated the deterioration, but was entirely consistent with a static Mundell-Fleming model. That "twin deficits" interpretation seemed ready made for explaining the mid-2000's worsening of the external deficits. Then, as in the 1980's, a surge in defense expenditures and large tax cuts seemed an altogether too obvious candidate.

Obviously, the twin deficits interpretation is a particularly simple one shock approach.[7] Even then, other candidates were being forwarded, all well within the standard set of factors key for the determination of external balances. For instance, demographics in the United States implied decreasing private savings, while demographics abroad (Japan, Europe) for instance.

These conventional motivations – public saving, private saving – could be examined in a less formalistic approach. The saving-investment approach did exactly that; starting from the perspective from the national saving identity which states the current account balance is, by an accounting identity, equal to the budget balance and the private saving-investment gap. This is a tautology, unless one imposes some structure and causality. That more comprehensive (albeit ad hoc) approach modeled the current account explicitly focusing on the determinants of private investment and saving, and adds those variables to the budget balance.

Chinn and Ito (2007, 2008) examine the 1971 to 2004, which encompassed the beginning of global imbalances, following the methodology used by Chinn and Prasad (2003). Relying on a large cross country sample encompassing 18 industrial and 71 developing countries, using non-overlapping 5 year averages of the data, they relate current account balances to a number of explanatory variables to account for private saving and investment behavior, including demographic variables, per capita income, trade openness, as well as variability of terms of trade shocks and GDP growth. In addition, the budget balance enters in as a key macroeconomic policy variable. Additional explanatory variables include net foreign assets, and capital controls.

They find that government budget balances, initial net foreign asset positions and, for developing countries, indicators of financial deepening are positively correlated with current account balances. Among developing countries, they also find that higher terms of trade volatility is associated with larger current account surpluses (or smaller deficits). Greater macroeconomic uncertainty apparently increases domestic saving and also has a slightly negative impact on investment. The degree of openness to international trade appears to be weakly

[7] Not twins, but familial relations, according to Truman (2005).

associated with larger current account deficits among developing countries. Note that because they include average GDP growth and initial net foreign assets in the regressions, the saving-investment approach is consistent with some aspects of the intertemporal approach (discussed above).

Their key findings include the following. First, the budget balance is an important determinant of the current account balance for industrial countries; the coefficient for the budget balance variable is 0.15 in a model controlling for institutional variables. A series of robustness checks yield the results that a one percent point increase in the budget balance leads to a 0.1 to 0.5 percentage point increase in the current account balance. For the United States, their analysis confirms the view that it is a saving drought – not investment boom – that is contributing to the enlargement of current account deficits, although there is some evidence of anomalous behavior in the 2001-04 period. For the East Asian countries, Chinn and Ito find some evidence that the external imbalances are somewhat larger than predicted by their empirical models.[8]

In sum, fiscal, structural and demographic factors accounted for a large portion of the variation in current account balances, across countries, and across time. However, the current account balances of the United States and China are not entirely explained by these factors, particularly during the period of pronounced global imbalances. Those finding suggest that one needs to look elsewhere for explanation of an important share of the variation in current account imbalances.

2.3 East Asian Mercantilism and Self-Protection

Another prominent view attributed the East Asian surpluses to explicitly mercantilist behavior. From this perspective, the developing countries of East Asia have followed an export led development strategy. That export led strategy resulted in rapid growth; however, starting in the mid-1990's, current account surpluses evolved into current account deficits, as investment boomed.

[8] Chinn and Ito extend their analysis by accounting for endogeneity in two ways. First, they use an instrumental variables approach, and second they replace the budget balance with the cyclically adjusted budget balance. In both cases, the coefficient on the budget balance in both cases rises considerably, ranging from 0.45 to 0.49. The US current account deficit in 2001-04 was significantly different from that predicted by the model, but just barely. China's current account was within the 95% prediction band.

In the wake of the 1997 financial crisis, investment levels collapsed, while saving rates remained relatively high. Currencies depreciated sharply in the region; however, over time, East Asian central banks maintained their currencies at fairly weak levels. For some observers, this observation is sufficient to explain the relatively large and persistent current account surpluses in the region. One difficulty with this explanation is that the export led development path has been in place for decades; the explanation for the sharp break post-1997 is missing. Gruber and Kamin's (2007) findings that a dummy for East Asian countries that suffered crises in 1997-98 was statistically and economically reconciles this issue. In other words, history matters, and the searing experience of 1997, even after two decades, leaves an imprint on policy preferences, much like the experience of a hundred years ago informed German monetary policy in the last half of the twentieth century.

While the mercantilist model explains one side of the current account imbalances, it does not explain the other side – namely why it is that the United States, United Kingdom, and specific other developed (often English speaking) countries ran – and continue to run -- substantial deficits.

In a series of papers, Dooley, Folkerts-Landau, and Garber (2003, 2007, 2009) interpreted the U.S. current account deficit as the outcome of concerted mercantilist efforts by East Asian state actors. In this context, the financing of America's trade (and budget) deficit is and remains an explicit quid pro quo for continued access to American markets. Their explanation argues that the entire panoply of government interventions in East Asian economies are aimed at supporting exporting industries.

There are also difficulties with this thesis. Most notable is the mysterious aspect of timing: East Asian savings began flowing to the United States in 2003. Why not earlier, if the mercantilist impetus had been there all along?

An alternative interpretation for the large scale reserve accumulation has been attributed to the self-insurance or precautionary demand. Foreign exchange reserves can reduce the probability of an output drop induced by capital flight or sudden stop. This self-insurance motivation rose substantially in the wake of the East Asian crises; this point was verified by Aizenman and Marion (2003). Aizenman and Lee (2007) evaluated the relative importance of these of the various motivations by augmenting the conventional specifications for reserve holdings with proxy variables associated with the mercantilism and self-insurance/precautionary

demand approaches. While variables associated with both approaches are statistically significant, the self-insurance variables play a greater economic role in accounting for more recent trends.[9]

2.4 Global Saving Glut, Safe Assets and Exorbitant Privilege

The "global saving glut" explanation was most forcefully propounded by Bernanke (2005), with Clarida (2005a,b), and Hubbard (2005) making similar arguments. The saving glut view interprets excess saving from Asian emerging market countries, accounted for by rising savings and collapsing investment in the aftermath of the financial crisis (and to a lesser extent Europe), as the cause of the U.S. current account deficit. Starting in 2003, the burgeoning surpluses of the oil exporters, ranging from the Persian Gulf countries to Russia, added as sources of excess saving. From this perspective, the U.S. external imbalance is a problem made abroad; the lack of well-developed and open financial markets encourages countries with excess savings to seek financial intermediation in well-developed financial systems such as the United States. Hence, a solution may only arise in the longer term, as better developed financial systems mitigate this excess savings problem.

As for the saving glut variables, Chinn and Ito (2007) and Ito and Chinn (2009) find evidence of significant interactions between financial development, financial openness, and legal development, which might help reduce the level of current account balances through reducing national saving. Alfaro, et al. (2008) and Gruber and Kamin (2009) also find that better quality of government institutions and regulatory environment tends to attract capital inflow (i.e., worsen current account balances). Blanchard and Giavazzi (2002) and Abiad, et al. (2007) find evidence for financial integration leading to current account deterioration in the experience of the European integration.

There's no doubt that the financial systems of emerging Asia were less sophisticated than those of the United States, and perhaps even those of Japan and Singapore. But this characterization had long been true; the timing of the glut was critical.

In a variation on the theme, Caballero, Farhi and Gourinchas (2008) model the saving glut explanation as a shortage of safe assets in the developing world.[10] Safe assets – i.e., assets like U.S. Treasury securities that maintain their value in even the most adverse financial events –

[9] See also Ghosh, et al. (2012).
[10] Mendoza, Quadrini and Rios-Rull (2009) model financial development as the increase in the degree of enforcement of financial contracts.

can be acquired in net by countries running a net surplus with those countries (or country) that can generate such assets, like the US.[11]

The model can explain the timing of the onset of the saving glut. Demand for these safe assets was sated as long the supply grew sufficiently fast relative to demand. However, with the surge in emerging market growth, including that of China, during the 1990's and 2000's, the demand outstripped supply. The "conundrum" – the failure of long term Treasury yields to rise in the mid-1990s could be rationalized on the basis of this safe-asset shortage. So too can the frenetic creation of AAA-rated synthetic bonds, in the years leading up to the U.S. financial crisis.[12]

The safe asset hypothesis is closely allied with the "exorbitant privilege" argument posited by Gourinchas and Rey (2007), and expounded at length in Eichengreen (2011). The exorbitant privilege of being able to finance budgets cheaply is a reflection of the ability to manufacture public safe assets.

I think it would be fair to say that the safe assets view has come to dominate the perspective of why the United States continues to run current account deficits; it retains a quasi-monopoly on the production of safe assets, in the form of sovereign debt.

2.5 Intervention, or Currency Manipulation Intentional or Not

In a series of works, Joe Gagnon and coauthors (Bayoumi, et al. (2013), Gagnon et al. (2017)) have propounded the view that currency manipulation, defined as excessive foreign exchange intervention, is the root cause of a large share of global imbalances. Intervention to weaken a currency leads to larger current account balances than would otherwise occur. The difficulty in quantifying this view is that by the balance of payments accounting identity, the current account should be related (positively) to foreign exchange intervention. Bergsten and Gagnon (2017) identify excessive intervention with currency manipulation.

The proper approach is then to account for the endogeneity of foreign exchange intervention, by using an instrumental variables approach. Using annual data for a set of

[11] One issue with the safe asset view is that some producers – like Germany – run surpluses. Then US Treasurys must be have special attributes above and beyond low default risk. Since the purchases of Treasurys are often by the public sector, one need not argue that the safe asset motivation is by only private actors. Risk averse central banks might also wish to save in safe assets as well.

[12] Frankel (2006) questions whether the Caballero et al. model well explains the 2003-06 period, given that some emerging markets were able to generate high quality assets.

emerging market economies, Bayoumi, Gagnon and Sabrowski (2013), use measures such as the presence of an IMF program, months of import coverage, whether the country is an emerging market, and relative income, as well as presence of a sovereign wealth fund. They find that the impact of net official flows on the current account ranges from 0.36 to 1.15 in their baseline specification, after accounting for fiscal, demographic, growth factors, as well as the level of income.

This argument is closely related to the mercantilist argument, to the extent that the reason many countries – particularly emerging market economies – intervene is to gain competitive advantage for their export industries. But unlike the standard mercantilist argument, in one interpretation, countries can engage in currency manipulation for other reasons than pure mercantilism. It could be for "self-protection", building up foreign exchange reserves in case of a large negative shock that would induce a drawdown of reserves.

Bergsten and Gagnon (2017) write "Manipulators have not necessarily set out primarily to divert economic activity away from other countries." Management of monetary policy, maintenance of financial stability, and shadowing larger neighbors exchange rate policies are all alternative explanations that apply to different countries.[13]

3. Updating the Evidence on Current Account Imbalances

3.1 The Methodology

In order to shed light on the strength of these various hypotheses, I estimate the following model based upon work with Eswar Prasad (Chinn and Prasad, 2003), as well as most recently, with Hiro Ito and Barry Eichengreen (Chinn, Eichengreen, and Ito, 2013), which relates the current account balance to four sets of variables:

- A fiscal variable (budget balance)
- Demographic variables (youth and elderly dependency ratio)
- Financial development variables (credit, institutional development, financial openness)

[13] See also Choi and Taylor (2017) who show that foreign exchange reserves have a differential impact on exchange rates and current account balances relative to non-reserve net foreign assets. They interpret this finding as consistent with both mercantilist and precautionary motives.

- Other control variables (growth, initial net international investment position, terms of trade volatility, relative income)

The current account balance and the general budget balance is expressed as a share of GDP. Financial development is measured as the ratio of private credit to GDP. Financial openness is measured using the *KAOPEN* index of Chinn-Ito (2006) and institutional development is measured as the first principal component of law and order, bureaucratic quality, and anti-corruption measures. Net foreign assets as a ratio to GDP (from Lane and Milesi-Ferretti, 2007); relative income (to the U.S.) together with its quadratic term; terms of trade volatility; output growth; trade openness (exports plus imports as a share of GDP); a dummy variable for oil exporting countries; and time fixed effects.

I estimate this model using panel data for 23 industrial and 134 developing countries between 1971 and 2015, using non-overlapping 5-year averages of the data, thereby permitting a focus on medium-term variation in current account balances, rather than short-term, cyclical, behavior. All the variables, except for net foreign assets to GDP, are converted into the deviations from their GDP-weighted world mean prior to the calculation of five year averages while net foreign asset ratios are sampled from the first year of each five-year panel as the initial conditions.[14] The use of demeaned series controls for rest-of-world effects. In other words, a country's current account balance is determined by developments at home relative to the rest of the world.[15]

A large literature focuses on the contrasting saving, investment and current-account-balance behavior of industrial and developing countries, often disaggregating further between emerging markets (middle-income countries with relatively extensive access to international capital markets) and other developing countries, pointing out that potential determinants of these outcomes –growth rates, financial development, demographic structure, for example – differ importantly across these groupings. In addition, a number of studies (e.g. Alfaro, et al. 2008; Chinn and Ito, 2007; Ito and Chinn, 2009) have suggested that the impact of these variables and

[14] Terms-of-trade volatility (*TOT*), trade openness (*OPN*), and legal development (*LEGAL*) are averaged for each country, i.e., they are time-invariant. The five year periods are 1971-75, 1976-1980, etc.
[15] The data are mainly drawn from World Bank, *World Development Indicators*, IMF, *International Financial Statistics*, and IMF, *World Economic Outlook*. Further detail can be found in the Data Appendix.

not only their values may different systematically across these groupings .[16] I therefore estimate separate regressions for industrialized countries (IDC), developing countries (LDC) and emerging market economies (EMG), in addition to the full sample.[17]

It's useful to distinguish this approach from a key competing methodology for assessing global imbalances – namely the IMF's external balance approach (EBA). This framework focuses on a higher (annual frequency) data, and allows for the inclusion of market factors such as risk appetite (via the inclusion of the VIX) as well as policy-related variables like health spending. At the same time, fiscal, demographic and asset variables also enter into the analyses. One way to view the IMF's current framework is that it captures, among other things, the role of policies (like desired levels of health spending) that would otherwise be taken as given. Nonetheless, many of the same findings regarding fiscal policy, demographics and financial development will be found using either approach.[18]

3.2 Just the Basics

I first proceed by examining the relationship between current account balances and "textbook" variables (growth of income, terms of trade volatility) and saving-investment variables (budget balance, demographics).

This very basic specification, which admittedly incorporates a number of channels, explains a substantial share of the variation in current account balances, ranging from 0.22 to 0.57, depending on the country grouping. For the industrial country grouping, the importance of the fiscal factor is prominent: a one percentage point increase in the fiscal deficit results in a 0.6 percentage point increase in the current account deficit. These estimates are substantially larger than the findings in Erceg et al. (2005), Bussière, Fratzscher and Müller (2010), Corsetti and

[16] Based on the Solow growth model, the level of development affects rates of return across countries, which determine the direction of capital flows. On the recent situation of global imbalances, where capital flows from developing to developed world contrary to the prediction of the Solow growth model (the "Lucas paradox"), Alfaro, et al. (2008) argue that institutional development also affects the direction of capital flows.

[17] Emerging economies are those classified as either emerging or frontier in 1980–1997 by the International Financial Corporation, plus Hong Kong and Singapore.

[18] The approach adopted in this paper is very close in spirit to the IMF's precursor to the EBA, the CGER. Discussion of the empirical results underlying the latest version of EBA is reported in Phillips et al. (2013). IMF (2016) reports the most recent external assessment.

Müller (2006), and Gruber and Kamin (2007). To some extent, these new findings offset the earlier naysaying about an important role for fiscal policy.[19]

Moreover, the proportion of variation explained in that specification is nearly 50%. This finding is remarkable to the extent that there are no fixed country effects – just time fixed effects. Hence, there's no reason to be particularly nihilistic about the empirical determinants of current account balances.[20]

The fiscal balance is of less economic impact for the emerging market group countries, as well as the LDCs. Presumably, this is because of the procyclicality of fiscal policy in these countries. Nonetheless, these factors remain statistically important.

The other conventional determinant of current account balances, namely demographics, comes into play significantly. Developing countries with higher dependency ratios (and, by the life-cycle hypothesis, lower savings rates) generally have weaker current account balances, although the statistically significant estimates are for youth dependency. Elderly dependency ratios do not typically evidence a statistically significant impact.

The other control variables, while not of central importance, largely enter in as expected. Larger net foreign asset positions, which tend to generate a stronger income account, affect the current account balance positively, as anticipated. The relative income terms, which tend to be jointly if not always individually significant, indicate that higher income countries generally have more positive current account balances (capital tends to flow from richer to poorer countries as suggested by the standard neoclassical growth model – see e.g. Lucas 1990). Terms of trade volatility induces precautionary saving; hence – except for industrial countries, higher volatility is associated with higher current account balances. Finally, oil exporting countries have stronger current account balances, other things equal.

Higher income growth, to the extent it presages higher future growth, enters in with a negative force. (A Keynesian interpretation is possible as well, wherein higher growth pulls in

[19] Gagnon et al. (2017) find that the fiscal coefficient varies by financial openness, as proxied by the Chinn-Ito index; for more open economies, the coefficient is larger.

[20] In other work, we account for the endogeneity of the fiscal balance by using proxy measures for cyclically adjusted balances, estimated using HP filtered data. The estimated coefficients are typically higher; hence these estimates are probably conservative estimates of the fiscal impact.

more imports; however, the use of time averaged data should mitigate this effect). The effect shows up in the full sample, and for LDCs, with statistical significance.[21]

3.3 Evaluating the Saving Glut and Safe Assets

The saving glut hypothesis is widely interpreted as meaning that the less developed the financial system, the more likely savings are to be redirected externally. The difficulty is in properly measuring financial development, a long standing challenge in empirical work. The traditional approach of using private credit formation expressed as a share of GDP is easy, but extremely unsatisfying, as it's a mere quantity measure. In order to allow for some nuance in this variable, I interact the quantity measure with other institutional factors, to account for the quality of the financial intermediation. Specifically, I enter in a measure of legal development, and capital account openness (under the presumption that financial openness spurs financial development (Chinn and Ito, 2006)). Interaction terms with financial development are also included; in sum, these are defined as saving glut variables. Augmenting the basic specification in Table 2 leads to the following results.

The proportion of variation explained rises by about 10 percentage points. Financial development exerts the negative effect, although only in the case of emerging markets is the effect statistically significant

In contrast to the results in Chinn, Eichengreen and Ito (2013), I do not find as strong evidence for the hypothesis that countries with more developed financial markets have weaker current account balances. For all subsamples, financial development is negatively related to the current account balance, but only statistically significantly so for EMG. This negative impact of financial development on the current account balance is more pronounced when it is coupled with a more open capital accounts (although not significantly so), consistent with the saving glut hypothesis.

What is true is that a more highly developed institutional level, as summarized by the composite legal measure, coupled with a larger amount of credit is associated with a more negative current account. The only challenge is that the effect is nowhere statistically significant.

[21] Other control variables, such as private credit to GDP (sometimes used as a proxy measure for financial development) and trade openness are not apparently relevant.

Why the failure to replicate the results in Chinn, Eichengreen and Ito (2013)? It is not difficult to mechanically isolate the reason for the weakening of the saving glut variables. Dropping the 2011-2015 period re-establishes the expected signs for these coefficients. Does this mean that the saving glut is no longer? Several interpretations arise – first that the 2010-2015 period is so beset by idiosyncratic shocks that the effect of these saving glut variables are obscured. Second, the saving glut effect has faded in importance over time. Yet another view is that in using a standard measure of financial development, I fail to capture the role of a developed financial system. I return to this point later on.

What is interesting is that the fiscal and to a lesser extent demographic variables retain their importance. The budget balance has a large impact on the current account surplus, ranging from 0.22 to 0.52. This contrasts with estimates in Chinn, Eichengreen and Ito ranging from 0.13 to 0.32. That means fiscal policy has become more influential on current account balances in the post-crisis world.

Figure 4 illustrates, for selected countries, the contributions of these factors to current account balances using the estimates corresponding to those in Table 1. The variables are grouped into 1) the government budget balance variable; 2) a "saving glut" group composed of the estimated contributions of financial development, legal development, and financial openness (along with their three interaction terms), 3) a "demography" group composed of the contributions of young and old dependency ratios, and 4) other factors.[22] The bars illustrate the contributions of these factors to the levels of current account balances, while the lines indicate the predicted (dashed line) and actual current account balances.[23] Comparing these bars with actual current account balances allows us to infer the contribution of these different factors to the level and change in the current account.[24] A number of interesting patterns emerge.

- The predicted current account balance for the most recent five year period is not too far off the mark for key "countries of interest" – Japan, and quite interestingly Germany and China. For China, the predicted is almost spot on.

[22] The contributions of the three groups of variables are calculated as $\sum_{k=1}^{p} \hat{\beta}_i x_{it}$ where x_{it} refers to the variables included in each of the four variable groups.

[23] By construction, the sum of the four bars should add up to the predicted values or changes in the predicted values (the dotted line with the circular nodes).

[24] We do not include the prediction intervals; see Chinn and Ito (2008) for examples. Bussière et al. (2010) use Bayesian averaging to narrow the intervals.

- While the contributions of budget balances vary over time, the contributions of the "saving glut" and "demography" variables tend to be relatively stable.
- The contribution of demographic factors tends to be large for industrialized countries but not for emerging markets.
- For the United States, although the budget balance is not the largest single contributor to the current account imbalance, it is a substantial factor, accounting for slightly over one percentage point of the four and a half percentage point deficit 2006-10. Moreover, changes in the budget are correlated with changes in current account balances.
- For Germany, 1.5 percentage points of the nearly 7 percentage point surplus was due to fiscal factors; slightly over one percentage points of the four point improvement in the surplus moving from 2006-2010 to 2011-15 was accounted for by fiscal policy.
- While the "saving glut" variables have contributed to improving current accounts for many emerging market countries, including some key countries (e.g., China), their effect has been relatively stable; this is not just a recent phenomenon as some proponents of the saving-glut hypothesis have argued.[25]
- The importance of the saving glut variables has dropped in the most recent decade for which data are available. This suggests that different factors are driving imbalances over the crisis and post-crisis period.

The lack of import of saving glut variables as proxied in the empirical work does not speak directly to the proposition that demand for safe assets have driven the US current account balance. The decompositions indicate that the U.S. current account deficit is consistently underpredicted – by around 2 percentage points of GDP, over the past twenty years.[26] It's difficult to further identify this number with specifically a safe assets motivation in this aggregate cross-country framework.[27] However, the finding that the own-currency share in world foreign exchange reserves – a proxy variable for reserve currency status – shows up as *highly*

[25] Counter-intuitively, the effect of the saving glut variables for the US is to raise the balance. If one were to include the effect thought to arise from dollar share in global foreign exchange reserves into this category, the net effect be to reduce the balance.
[26] The finding that there is a consistently significant US dummy is consistent, in a mechanical sense, with this underprediction of the deficit; see also results in Chinn, Eichengreen and Ito (2013).
[27] See for instance Bertaut et al. (2012).

statistically significant in Phillips et al. (2013) is further evidence consistent with the safe asset factor.

3.4 Assessing the Impact of Net Official Flows

What about the view that intervention matters? This is not so much a "theory" as much as standard open economy macro theory that recognizes that government intervention, manifesting in net official flows, should have some impact on macro aggregates, and hence the current account. The critical questions revolve around the nature of the causal mechanism, and whether other effects might offset the impact.

Table 3 presents the results of augmenting the basic specification with net official flows, a proxy measure for foreign exchange intervention, expressed as a share of GDP. Once again, estimates are presented for all four country groups.

Unsurprisingly, the intervention variable shows up as economically and statistically significant. Over the entire sample, the estimated coefficient relating net official flows, is about 0.35, meaning that a one percentage point increase in intervention is associated with a one third percentage point increase in the current account balance. This is a big effect, statistically significantly different from zero. Augmenting the basic specification (that is, without institutional indicators to account for financial development) leads to a noticeable increase in proportion of variation explained, which is unsurprising given how current account balances and net official flows are mechanically linked.

Obviously, country policymakers choose to intervene for a variety of reasons. They do not exogenously intervene. Hence, in order to obtain a consistent estimate of the impact of intervention on the current account, one would want to account for the endogeneity of policy. If the motivation for intervening is mercantilist – low per capita income for instance – then appropriate instruments would be variables that correlate with this condition, while not simultaneously affected by intervention. The corresponding results are reported in Table 4. Using instrumental variables, where EMG status and per capita income are included, [28] I obtain results are broadly supportive of the proposition that foreign exchange intervention is correlated with current account balances, and strongly so (Table 4). Taken literally, the point estimates suggest

[28] The instruments are a dummy for emerging market countries, an interaction term with relative income, and lagged (5 year) net official flows.

for LDCs, each one percentage point increase in intervention (as a share of GDP) results in a 0.85 percentage point increase in the current account. If this is true, then intervention has had a large impact on current account imbalances.[29]

To the extent that foreign exchange intervention proxies for saving glut factors, the proportion of variation explained is *less* than that for the saving glut specification. This is an interesting finding to the extent that the causal chain going from net official flows to the current account is much more direct than that going from the (very) imperfect proxies for global saving glut motivations.

Turning directly to the imbalances of today, to the extent that intervention is largely reversing during this last period (2011-15), the net effect of intervention has been to *shrink* current account surpluses overall.

3.5 Re-assessment

The foregoing results suggest fiscal policy, while not necessarily central to the developments of the mid-2000s, can be an important determinant of imbalances. Other conventionally recognized determinants of imbalances, such as demographics, level of economic development, proxy measures for uncertainty, appear to explain a substantial portion of the variation in medium term current account imbalances. Hence, the perception that global imbalances are largely inexplicable is unjustified.

The importance of global saving glut proxy measures, to the extent they are important, have diminished in economic and statistical import over time. In previous analyses, they were seldom of central import, but even then, time series variation in those observed factors were insufficient to explain the dramatic moves in imbalances over time. It might be that the empirical measures aimed at capturing the saving glut effects are inadequate, so that most everything is missed. Or it might be the role of these factors are truly diminishing in importance. At the same time, it appears that with the addition of recent data, the fiscal dimension has become more prominent.

[29] This estimate seems implausibly large; certainly alternative instrumental variables would deliver different estimates. In addition, Gagnon et al. (2017) shows that there is variation in the efficacy of intervention; more financially open economies exhibit smaller effects on the current account arising from the net official flows variable.

4. Some Policy Implications

Increasing current account surpluses and deficits are of concern, but perhaps not for the same reason they were in the mid-2000's. A decade ago, the imbalances – with the US on one side and East Asia and oil exporters on the other – signalled a financially overheated US economy. The financial capital flows primarily but not exclusively went to the United States, drawn in by financial innovation and non-regulation, drove the current account deficit. Capital flows in turn spurred asset booms that deflated in a spectacular way. How much was driven push factors – excess saving – and how much from pull – remains a source of debate.[30] In any case, it was not the current account imbalances themselves that posed a systemic problem, but rather what they signalled in terms of capital flows.

Now, a decade later, the current account deficits are large for economies only now approaching full employment. Other countries have surpluses that are large, even while above full employment. That suggests that the central challenge is to simultaneously achieve internal and external balance. At this point, it's useful to consider, armed with estimates, some key points of what constitutes a feasible course of policy actions.

To begin with, it's pretty clear that to the extent saving glut factors are relevant drivers of current account imbalances in emerging markets, these factors are not going to disappear over time. More specifically, the US as the quasi-monopoly provider of safe assets is also unlikely to erode substantially in any policy-relevant horizon. Indeed, the quantity of effective safe assets has probably declined since the financial crisis, further exacerbating the shortage.[31]

One major observable manifestation of that role, the US dollar as the key international reserve currency, has been remarkably durable over the post-war era, and shows very little evidence of eroding in a meaningful fashion.[32] That means that while the particular creditor economies might change over time, the US will tend to continue to run deficits larger than is explicable by other factors.

What then remains? In contrast to some earlier analyses, fiscal policy retains potency. However, the latitude for using the fiscal measure is constrained. For 2017, the US has a

[30] Chinn and Frieden (2011) lays out the case that more of the financial crisis was "made in America" than "made in Beijing", although clearly both aspects were important.

[31] Caballero, Farhi and Gourinchas (2017) estimate that safe assets have fallen from about $20.5 trillion to $12.3 trillion 2007 to 2011. That represents a drop in the ratio from 37% to 18% of world GDP.

[32] Chinn and Frankel (2007, 2008) show that the US dollar share of reserves is extremely persistent; add to this a nonlinearity in the relationship between GDP and market thickness and reserve shares, and the dollar is going to be dominant for the foreseeable future, even if new reserve currencies like the RMB rise.

projected 2.7 percent current account deficit at full employment. While the euro area as a whole has a 3 percent current account surplus with -0.7 percent output gap, Germany has an 8.2 percent current account surplus, with a positive 0.6 percent output gap. Japan has a 4.2 percent current account surplus with an output gap of only -1.0 percent.[33]

This particular configuration of external and internal imbalances complicates using fiscal policy. Larger budget deficits in Germany for instance could measurably shrink the German surplus – but at the cost of pushing up the output gap. This wouldn't be altogether a bad thing,[34] given slack is essentially zero, but it does limit solving matters using solely fiscal policy. There's considerably more latitude for the euro area as a whole, but then what is needed is for the Southern European creditor nations to spend more – something that is constrained by sovereign borrowing costs.

For the United States, fiscal consolidation could measurably shrink the current account surplus. However, here too there is a constraint on what can be accomplished, given that full employment has only just been achieved. Furthermore, there is the problem that fiscal retrenchment implies a further deceleration in the creation of safe assets, exacerbating the safe asset shortage.[35] [36]

In the traditional discussion of the medium term determinants of current account balances, monetary policy is typically given short shrift. That is, I think, largely because of the presumption that the effects of monetary policy on, for instance, the exchange rate will be short run. Otherwise, with (effectively) two instruments, the full employment and external balance targets could be achieved.[37]

In the immediate future, however, it seems likely that monetary policy will be tightened in both the US and euro area, while tightening in Japan – an economy running a substantial

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[33] These estimates are from April 2017 *World Economic Outlook*.

[34] This is conventional wisdom (at least outside of Germany); see Fratzscher et al. (2015); "Germany's economy The sputtering engine," *Economist*, 20 November 2014. IMF (2017: 31) recommends: "In countries with fiscal space, such as Germany, fiscal policy should be geared toward bolstering productive capacity as well as demand. In turn, this would help reduce their current account surpluses, support intra-euroarea rebalancing, and generate positive demand spillovers for others."

[35] There is also the very real question of whether fiscal consolidation is at all plausible given the current dysfunctionality in fiscal policymaking in the United States. Perhaps the best that can be hoped for is a minimal amount of additional stimulus.

[36] The mitigation of the safe asset shortage conundrum could also help mitigate the imbalances problem. However, as discussed by Caballero et al. (2017), this is an intractable problem, and resolution – of even a limited nature – is unlikely to occur in the near future.

[37] This is merely an application of the Swan diagram, linking trade balance and full employment to combinations of government spending and exchange rate, but with monetary policy substituted in for the latter. See Chinn (2012).

surplus – is likely some time off (all defined in terms of the policy rate). That particular combination will likely lead to an exacerbation, rather than amelioration, of the US current account deficit. That being said, there may be ways in which tightening can be effected that will minimize dollar appreciation; recently Brainard (2017) has suggested tightening by way of balance sheet reduction might achieve that goal.[38] I think that imaginative ways of effecting policy could be very useful in managing the adjustment process, although the importance, quantitatively, remains to be seen.

Other policy measures are advisable, including those that have been forwarded in for instance IMF (2017); measures such as higher health spending in China and structural reforms in other countries might (and likely would) make internal and external balance more attainable; the estimates I have obtained do not speak to these particular measures, unfortunately.

Finally, there remains the option of directly constraining in some ways the use of intervention, i.e., limiting net official flows. The estimates reported in Section 3 suggest a sizable impact. The problem is that net official flows arise for a variety of reasons, ranging from the implementation of monetary policy, the development of sovereign wealth funds, to self-protection and mercantilism.

To tame the excessive use of foreign exchange intervention in a global financial system that contains minimal enforcement mechanisms is a challenge. It requires first and foremost a common understanding regarding intent, and second an international consensus for what constitutes currency manipulation. Bergsten and Gagnon (2017) have forwarded a series of metrics, and recommended countervailing intervention as a means of disciplining currency manipulators.

The question is whether in a time of fractious international economic relations, unilateral implementation of such measures can avoid retaliation and even more elevated levels of intervention. Trade policy relations are already in a contentious mood. Moving down this path of seems like one that has to be considered as a near last resort, even if the potential for significant effects exists.

5. Conclusion

Large portions of the global economy are approaching full employment; yet current account

[38] The argument relies upon the sensitivity of the dollar to the term premium being less than to the policy rate.

surpluses in some regions and deficits in others mean that a re-allocation of aggregate demand could in principle result in higher global economic activity. Against this backdrop, it makes sense to ask why these imbalances have partly re-appeared.

This updated analysis, encompassing the most recent years since the financial crisis and global recession, brings to bear new light on the issue of global imbalances. Those factors, which might have been central in the mid-2000's experience, appear to be of lesser import in recent times. More prosaic factors, including fiscal policy, have taken on a heightened prominence. To the extent that the oil exporters no longer contribute substantially to the surplus side, developments in commodity prices also have been determinative in the past – but (perhaps) no longer.

On the other hand, some aspects that were intractable in previous analyses remain so now, with additional data. The US current account deficit continues to remain substantially underpredicted, even as the model is better able to predict Chinese, Japanese and (the newest bete noire) German current account imbalances. That residual is consistent with the view that the U.S. with the de facto quasi-monopoly on generating safe assets retains the exorbitant privilege of easily financing its current account deficit above and beyond what the standard model implies.

That finding highlights the constraints on what can be done; policymakers are clearly not going to seek to diminish America's ability to generate safe assets. On the other hand, fiscal policy can (and has) had a noticeable influence on current account imbalances. Arguments that balances are immune to such measures should by now be dispensed with.

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Appendix 1. Data

Below is a listing of the mnemonics for the variables used in the analysis, descriptions of these variables and the source(s) from which the primary data for constructing these variables were taken.

Mnemonic	Source*	Variable description
CAGDP	WDI, WEO	Current account to GDP ratio
GOVBGDP	WDI, IFS, WEO	General government budget balance, ratio to GDP
NFAGDP	LM	Stock of net foreign assets, ratio to GDP
RELY	PWT	Relative per capita income, adjusted by PPP exchange rates, Measured relative to the U.S., range (0 to 1)
RELDEPY	WDI	Youth dependency ratio (relative to mean across all countries), Population under 15 / Population between 15 and 65
RELDEPO	WDI	Old dependency ratio (relative to mean across all countries), Population over 65 / Population between 15 and 65
YGRAVG	WDI	Average 5 year real GDP growth
TOT	WDI	Terms of trade
OPEN	WDI	Openness indicator: ratio of exports plus imports of goods and nonfactor services to GDP
PCGDP	WBFS	Ratio of private credit to GDP
KAOPEN	CI	Capital account openness
BQ	ICRG	Quality of Bureaucracy
LAO	ICRG	Law and order
CORRUPT	ICRG	Corruption index
LEGAL	Authors' calc.	General level of legal development, first principal component of BQ, LAO, and CORRUPT.
NOF	Gagnon	Net official flows, adjusted for sovereign wealth funds, as share of GDP.

* These are mnemonics for the sources used to construct the corresponding. CI: Chinn and Ito (2006); DPI2004: ICRG: *International Country Risk Guide*; IFS: IMF's *International Financial Statistics*; LM: Lane and Milesi-Ferretti (2006); OECD: *OECD Economic Outlook* Database; PWT: *Penn World Table*; WBFS: World Bank Financial Structure Database; WDI: *World Development Indicators*; and WEO: *World Economic Outlook*. Gagnon: personal communication from Joseph Gagnon, calculated based on IFS data and country data.

Table 1: The Basic Model

	FULL (1)	IDC (2)	LDC (3)	EMG (4)
Gov't budget balance	0.385	0.568	0.367	0.223
	(0.058)***	(0.091)***	(0.063)***	(0.047)***
NFA (initial cond.)	0.034	0.022	0.034	0.007
	(0.006)***	(0.014)	(0.006)***	(0.009)
Relative income	0.229	0.168	0.388	0.241
	(0.043)***	(0.055)***	(0.066)***	(0.072)***
Relative income squared	-0.228	-0.170	-0.379	-0.216
	(0.039)***	(0.049)***	(0.078)***	(0.069)***
Relative dependency ratio (young)	-0.037	-0.016	-0.039	-0.017
	(0.011)***	(0.019)	(0.012)***	(0.014)
Relative dependency ratio (old)	-0.006	0.000	-0.012	-0.017
	(0.009)	(0.015)	(0.010)	(0.011)
Fin Dev. - PCGDP	0.002	-0.002	0.000	0.010
	(0.007)	(0.010)	(0.010)	(0.012)
TOT volatility	0.118	-0.410	0.133	0.132
	(0.049)**	(0.134)***	(0.050)***	(0.071)*
output growth, 5-yr avg	-0.351	0.055	-0.374	-0.035
	(0.177)**	(0.195)	(0.180)**	(0.100)
Trade Openness	-0.005	0.017	-0.009	0.021
	(0.007)	(0.011)	(0.009)	(0.013)
Dummy-2005	0.018	0.013	0.018	0.039
	(0.013)	(0.010)	(0.018)	(0.015)**
Dummy-2010	-0.007	0.002	-0.010	0.018
	(0.014)	(0.010)	(0.018)	(0.017)
Dummy-2015	-0.018	0.032	-0.029	0.005
	(0.014)	(0.010)***	(0.018)	(0.015)
oil exporting countries	0.040		0.038	0.044
	(0.010)***		(0.010)***	(0.013)***
N	1,104	201	903	338
Adj. R2	0.33	0.49	0.32	0.34

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Note: Time fixed effects are included in the estimation, but only those for the 2001-05, 2006-10, and 2011-15 periods are reported in the table

Table 2: Basic Model Augmented with Saving Glut Variables

	FULL (1)	IDC (2)	LDC (3)	EMG (4)
Gov't budget balance	0.334	0.518	0.325	0.215
	(0.057)***	(0.101)***	(0.064)***	(0.054)***
NFA (initial cond.)	0.033	0.013	0.033	0.038
	(0.004)***	(0.014)	(0.003)***	(0.007)***
Relative income	0.180	0.204	0.286	0.151
	(0.042)***	(0.069)***	(0.062)***	(0.062)**
Relative income squared	-0.180	-0.199	-0.280	-0.143
	(0.037)***	(0.058)***	(0.068)***	(0.060)**
Relative dependency ratio (young)	-0.030	-0.029	-0.033	-0.008
	(0.011)***	(0.021)	(0.012)***	(0.013)
Relative dependency ratio (old)	-0.008	0.016	-0.009	-0.014
	(0.008)	(0.016)	(0.008)	(0.010)
Fin Dev. – PCGDP	-0.013	-0.007	-0.006	-0.041
	(0.008)	(0.012)	(0.015)	(0.020)**
Legal	0.006	0.009	0.008	0.007
	(0.003)**	(0.005)*	(0.006)	(0.008)
pcgdp x legal	-0.004	-0.006	-0.002	-0.017
	(0.004)	(0.009)	(0.007)	(0.012)
Financial Openness (KAOPEN)	0.003	-0.001	0.008	0.004
	(0.003)	(0.004)	(0.006)	(0.008)
KAOPEN x legal	0.003	0.009	0.005	0.006
	(0.001)***	(0.002)***	(0.002)**	(0.002)***
KAOPEN x pcgdp	-0.005	0.020	-0.004	-0.010
	(0.004)	(0.006)***	(0.005)	(0.007)
TOT volatility	0.160	-0.281	0.167	0.267
	(0.048)***	(0.147)*	(0.049)***	(0.076)***
output growth, 5-yr avg	-0.128	0.091	-0.161	-0.029
	(0.103)	(0.198)	(0.110)	(0.097)
Trade Openness	0.001	0.021	-0.006	0.009
	(0.007)	(0.012)*	(0.010)	(0.014)
Dummy-2005	0.018	0.013	0.018	0.044
	(0.009)**	(0.010)	(0.012)	(0.015)***
Dummy-2010	-0.004	0.005	-0.007	0.023
	(0.010)	(0.010)	(0.013)	(0.015)
Dummy-2015	-0.013	0.033	-0.026	0.011
	(0.010)	(0.012)***	(0.013)**	(0.014)
oil exporting countries	0.030		0.028	0.036
	(0.011)***		(0.011)**	(0.013)***
N	928	192	736	329
Adj. R2	0.47	0.49	0.48	0.45

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Note: Time fixed effects are included in the estimation, but only those for the 2001-05, 2006-10, and 2011-15 periods are reported in the table

Table 3: Basic Model Augmented with Net Official Flows

	FULL (1)	IDC (2)	LDC (3)	EMG (4)
Gov't budget balance	0.292	0.504	0.268	0.129
	(0.062)***	(0.094)***	(0.065)***	(0.052)**
NFA (initial cond.)	0.032	0.013	0.032	0.004
	(0.006)***	(0.013)	(0.007)***	(0.008)
Relative income	0.225	0.173	0.348	0.265
	(0.045)***	(0.063)***	(0.066)***	(0.067)***
Relative income squared	-0.226	-0.173	-0.335	-0.246
	(0.040)***	(0.055)***	(0.078)***	(0.070)***
Relative dependency ratio (young)	-0.025	-0.023	-0.029	-0.008
	(0.014)*	(0.021)	(0.016)*	(0.015)
Relative dependency ratio (old)	-0.009	0.020	-0.016	-0.010
	(0.010)	(0.019)	(0.011)	(0.011)
Net official flows	0.349	0.491	0.349	0.390
	(0.129)***	(0.163)***	(0.132)***	(0.096)***
Fin Dev. - PCGDP	0.004	0.001	0.003	0.009
	(0.007)	(0.012)	(0.009)	(0.010)
TOT volatility	0.108	-0.615	0.126	0.167
	(0.047)**	(0.140)***	(0.049)***	(0.070)**
output growth, 5-yr avg	-0.526	0.123	-0.549	-0.195
	(0.173)***	(0.220)	(0.172)***	(0.110)*
Trade Openness	-0.005	0.022	-0.010	0.022
	(0.006)	(0.012)*	(0.008)	(0.011)**
Dummy-2005	0.029	0.021	0.029	0.043
	(0.009)***	(0.010)**	(0.011)***	(0.012)***
Dummy-2010	0.004	0.010	0.003	0.026
	(0.009)	(0.011)	(0.011)	(0.014)*
Dummy-2015	-0.008	0.034	-0.017	0.014
	(0.009)	(0.011)***	(0.011)	(0.012)
oil exporting countries	0.029		0.028	0.041
	(0.010)***		(0.010)***	(0.014)***
N	989	171	818	305
Adj. R2	0.45	0.54	0.45	0.42

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Note: Time fixed effects are included in the estimation, but only those for the 2001-05, 2006-10, and 2011-15 periods are reported in the table

Table 4: Basic Model Augmented with Net Official Flows, Instrumented

	FULL (1)	LDC (2)
Gov't budget balance	0.203	0.140
	(0.068)***	(0.074)*
NFA (initial cond.)	0.032	0.032
	(0.002)***	(0.003)***
Relative income	0.190	0.243
	(0.069)***	(0.106)**
Relative income squared	-0.194	-0.225
	(0.071)***	(0.140)
Relative dependency ratio (young)	-0.013	-0.017
	(0.011)	(0.012)
Relative dependency ratio (old)	-0.003	-0.011
	(0.007)	(0.009)
Net official flows	0.756	0.851
	(0.155)***	(0.161)***
Fin Dev. - PCGDP	0.003	-0.000
	(0.008)	(0.011)
TOT volatility	0.150	0.177
	(0.047)***	(0.051)***
output growth, 5-yr avg	-0.543	-0.572
	(0.071)***	(0.077)***
Trade Openness	-0.005	-0.011
	(0.006)	(0.008)
Dummy-2005	0.020	0.019
	(0.010)**	(0.012)
Dummy-2010	-0.005	-0.007
	(0.009)	(0.012)
Dummy-2015	-0.016	-0.025
	(0.009)*	(0.011)**
oil exporting countries	0.019	0.015
	(0.010)*	(0.011)
N	888	739
Adj. R2	0.41	0.38

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Note: Time fixed effects are included in the estimation, but only those for the 2001-05, 2006-10, and 2011-15 periods are reported in the table

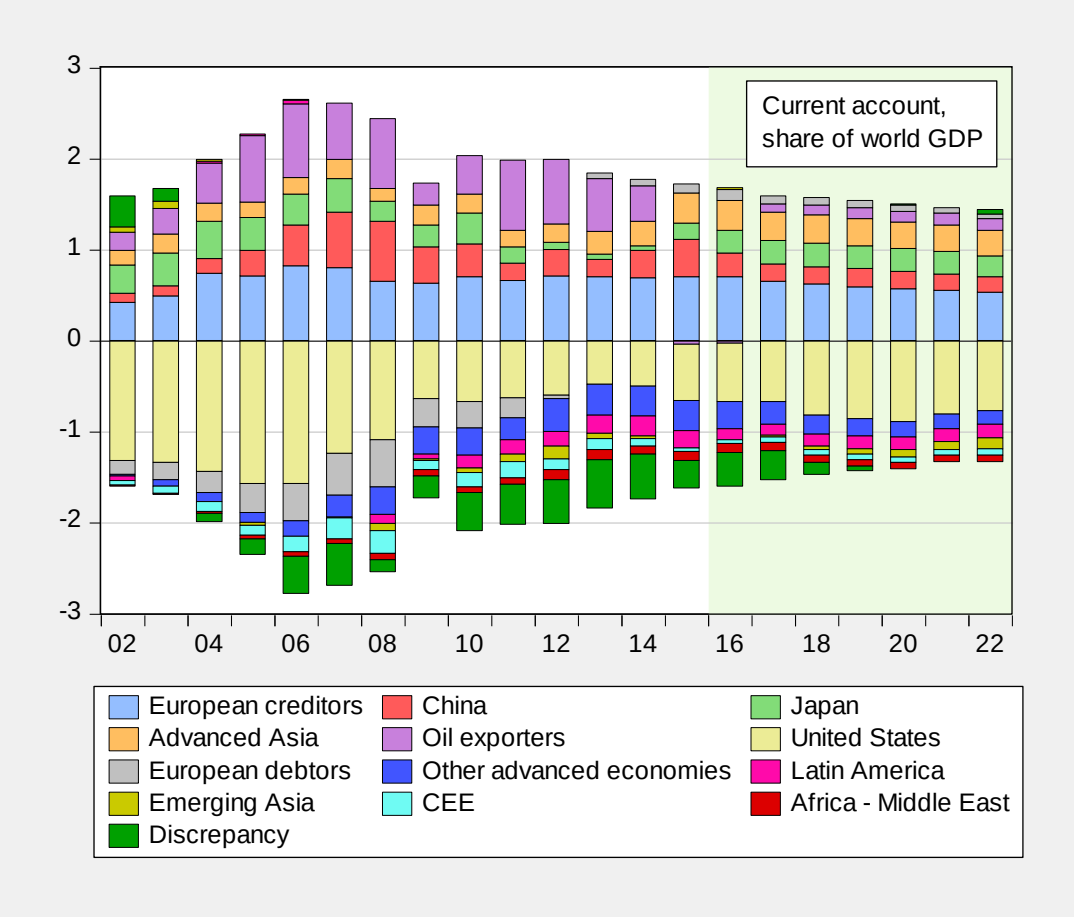


Figure 1: Global current balances for select country aggregates. Source: IMF, *World Economic Outlook*, April 2017.

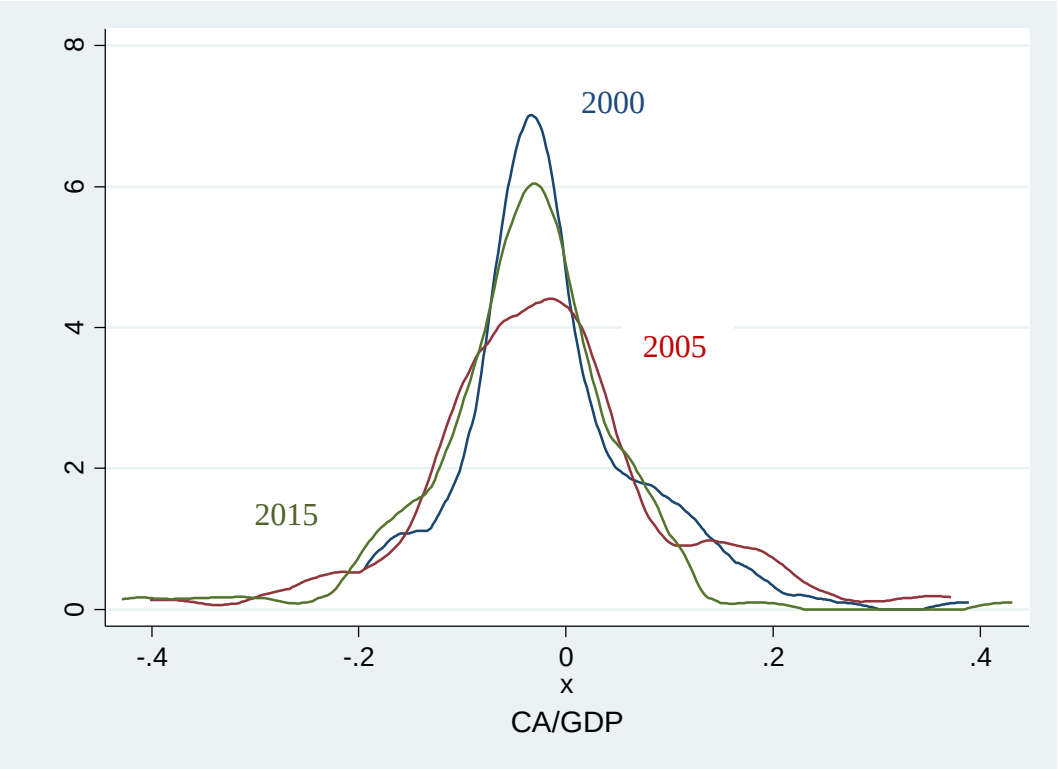
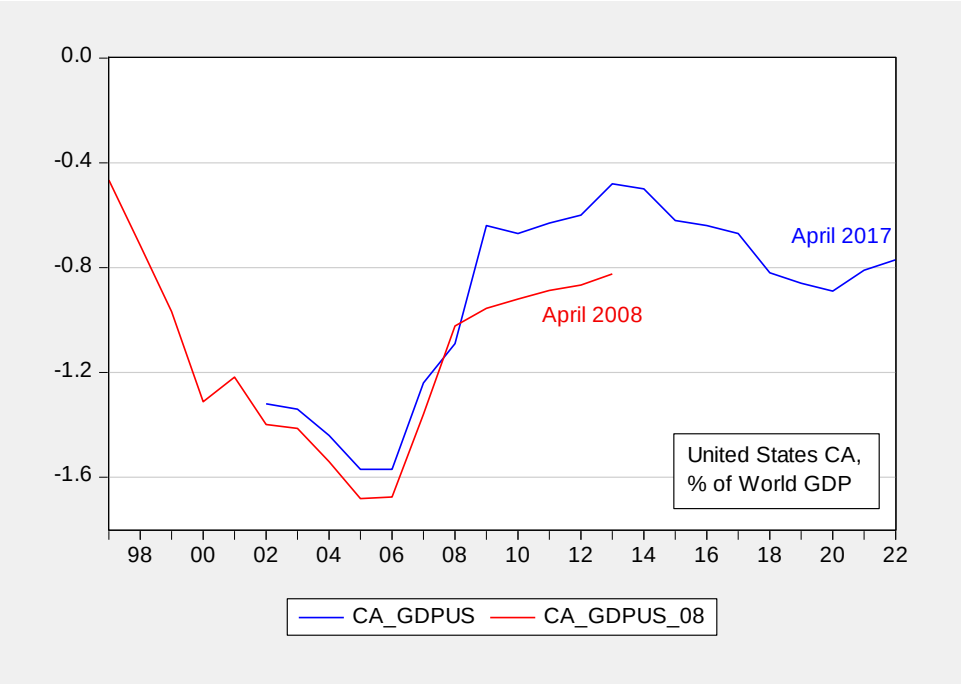
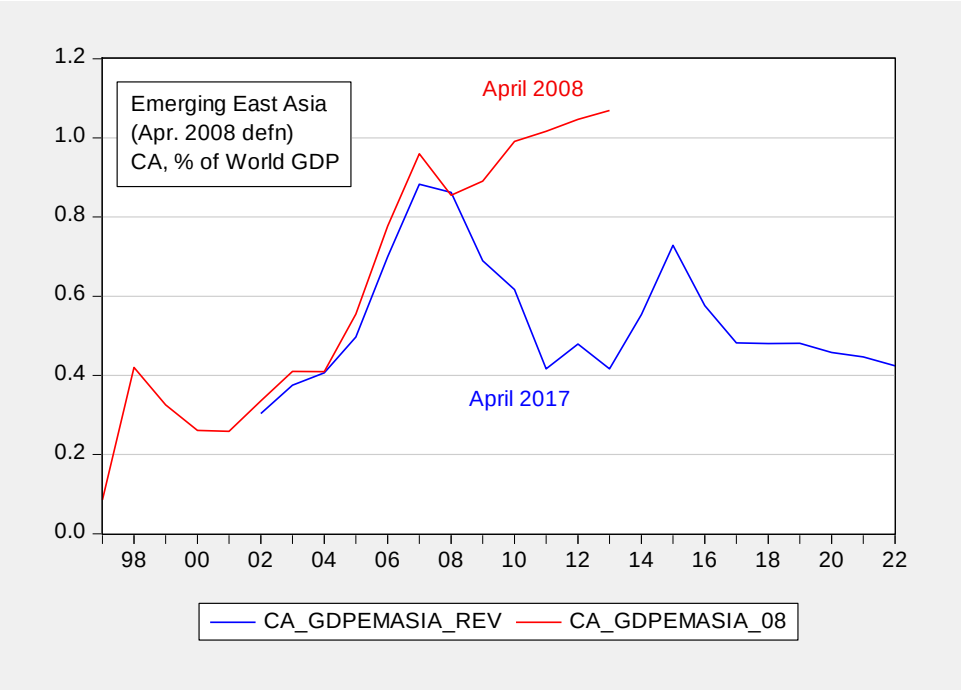
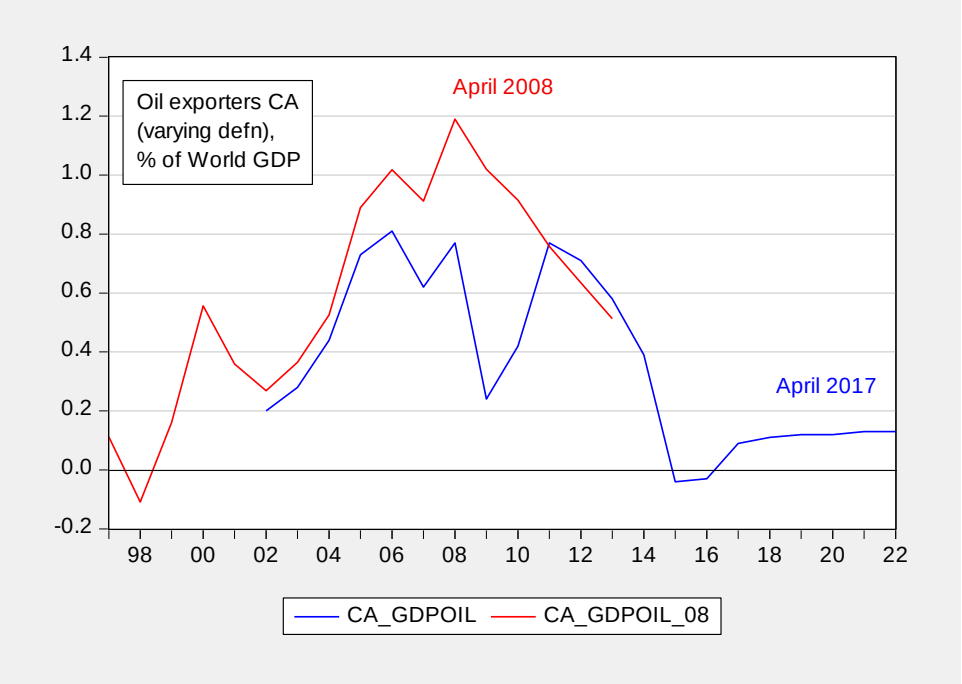
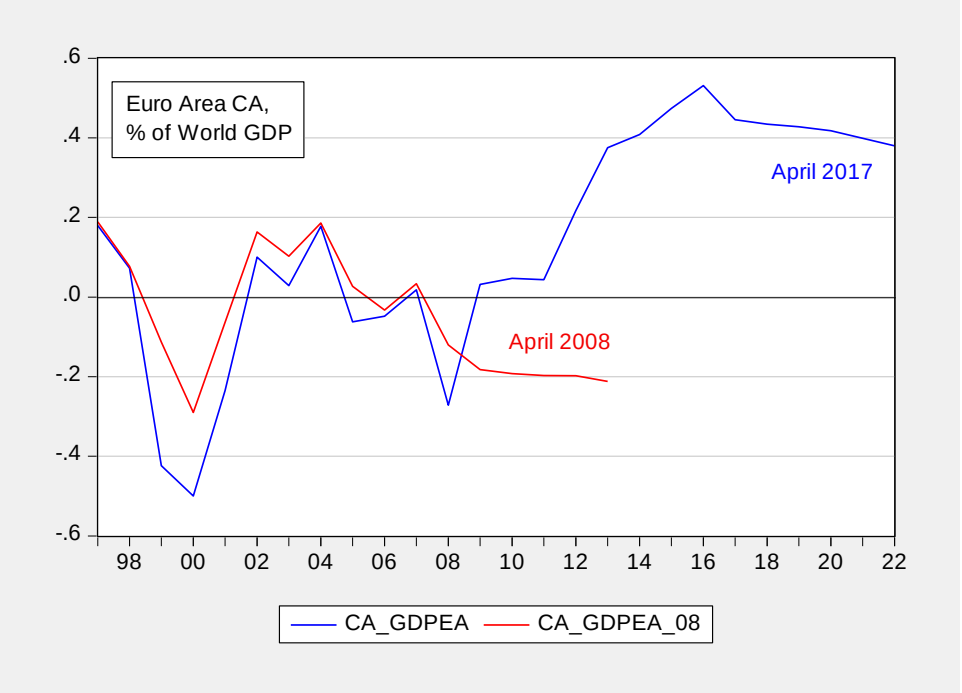


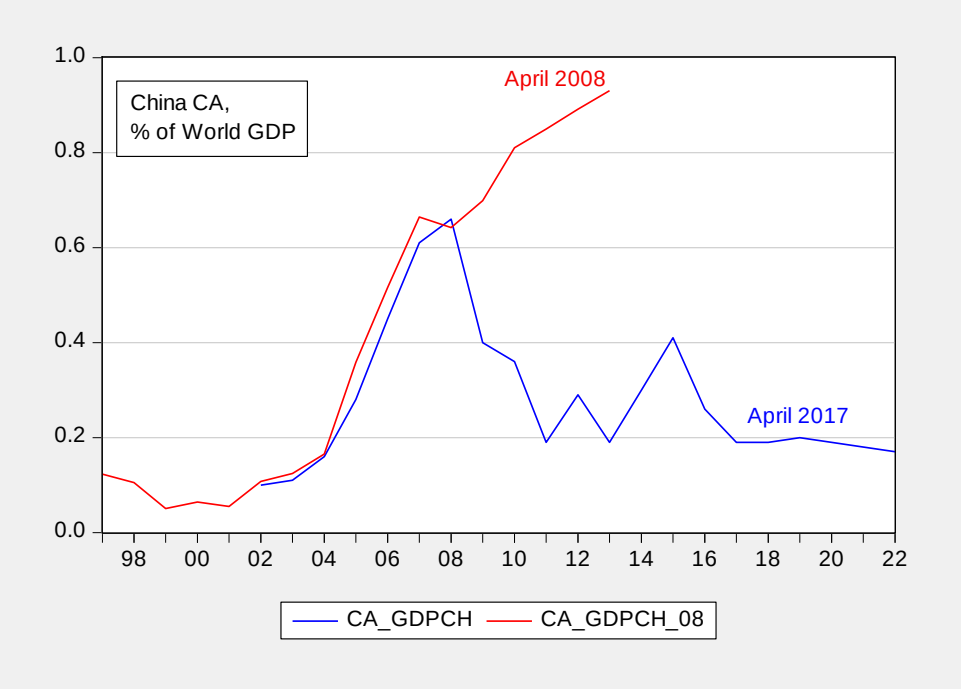
Figure 2: Distribution of current account balances, as share of national GDP.


0.0
-0.4
-0.8
-1.2
-1.6
98
00
02
04
06
08
10
12
14
16
18
20
22
April 2017
April 2008
United States CA,
% of World GDP
CA_GDPUS
CA_GDPUS_08


1.2
1.0
0.8
0.6
0.4
0.2
0.0
98
00
02
04
06
08
10
12
14
16
18
20
22
Emerging East Asia
(Apr. 2008 defn)
CA, % of World GDP
April 2008
April 2017
CA_GDPEMASIA_REV
CA_GDPEMASIA_08


Oil exporters CA
(varying defn),
% of World GDP
April 2008
April 2017
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
98
00
02
04
06
08
10
12
14
16
18
20
22
CA_GDPOIL
CA_GDPOIL_08


Euro Area CA,
% of World GDP
April 2017
April 2008
.6
.4
.2
.0
-.2
-.4
-.6
98
00
02
04
06
08
10
12
14
16
18
20
22
CA_GDPEA
CA_GDPEA_08



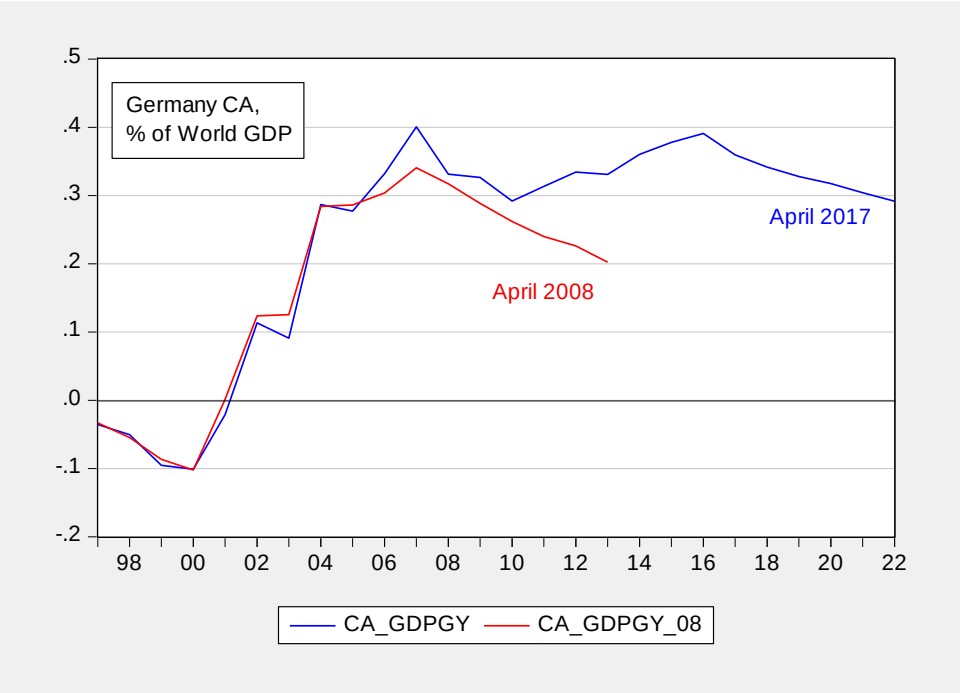
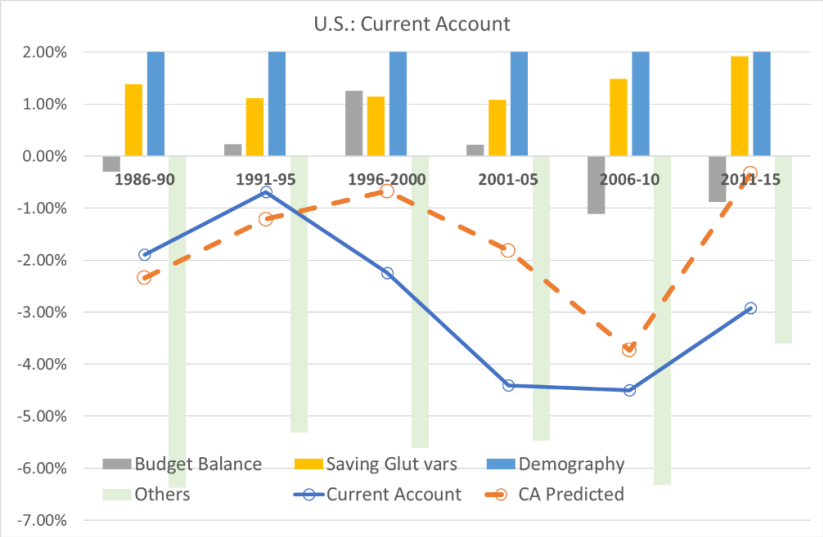
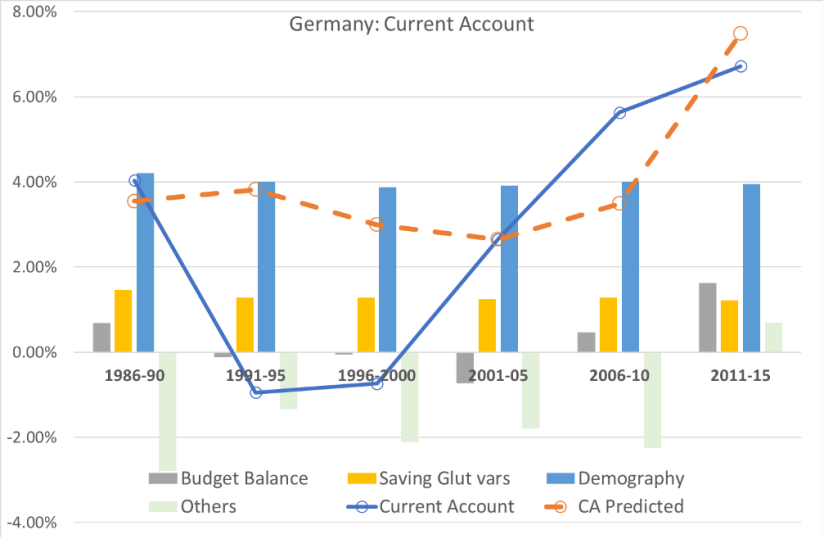
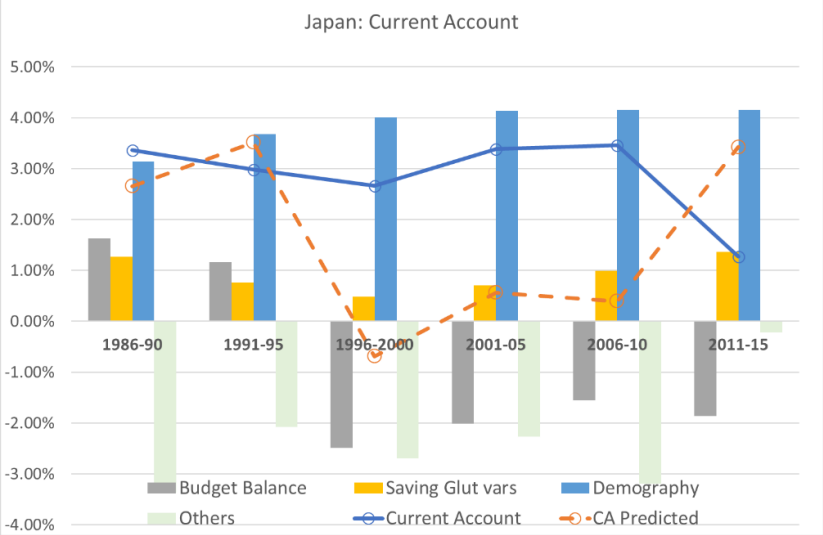
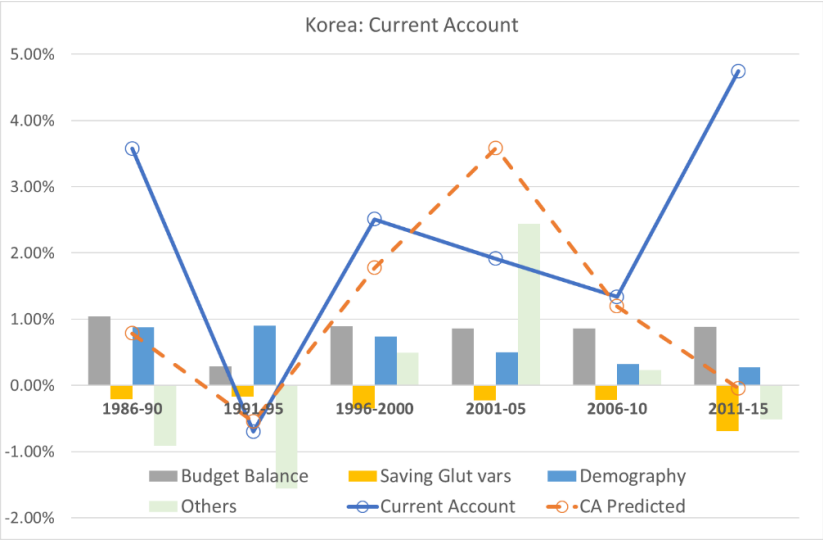


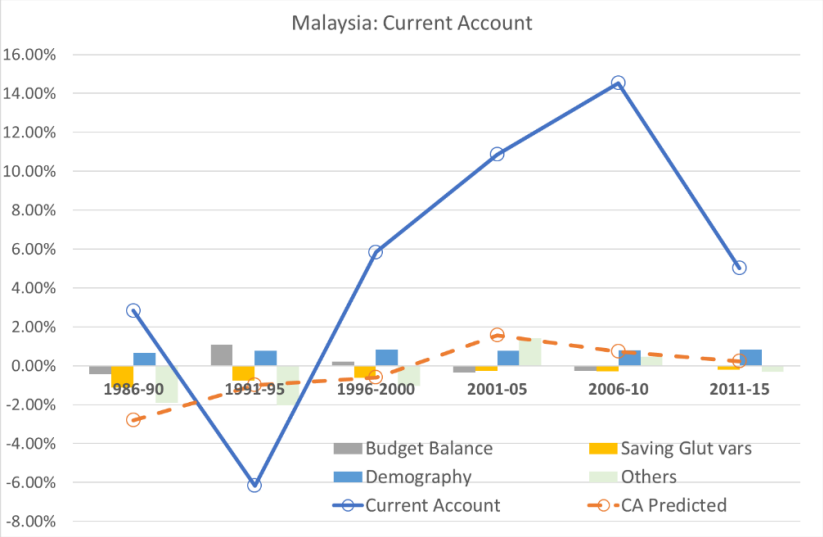
Figure 3: IMF economic projections from April 2008, and April 2017, for select economies.

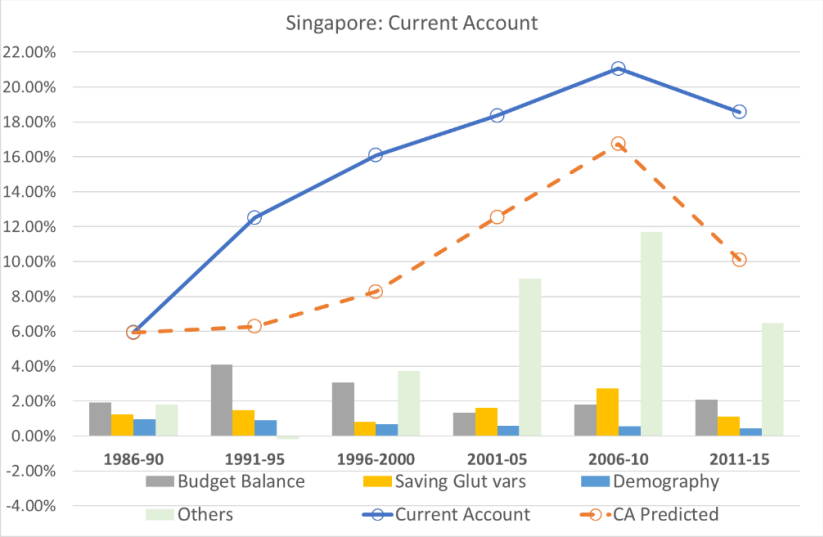

U.S.: Current Account
2.00%
1.00%
0.00%
-1.00%
-2.00%
-3.00%
-4.00%
-5.00%
-6.00%
-7.00%
1986-90
1991-95
1996-2000
2001-05
2006-10
2011-15
Budget Balance
Saving Glut vars
Demography
Others
Current Account
CA Predicted

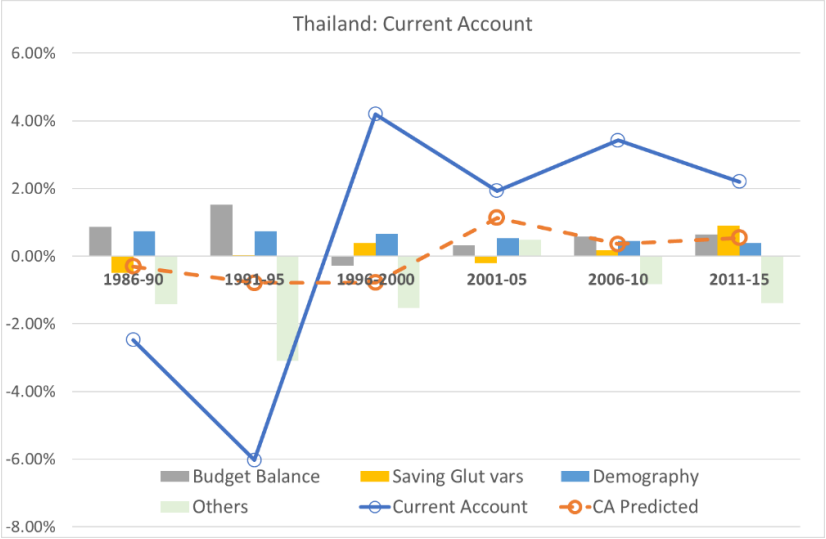

Germany: Current Account
8.00%
6.00%
4.00%
2.00%
0.00%
-2.00%
-4.00%
1986-90
1991-95
1996-2000
2001-05
2006-10
2011-15
Budget Balance
Saving Glut vars
Demography
Others
Current Account
CA Predicted


Japan: Current Account
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
-1.00%
-2.00%
-3.00%
-4.00%
1986-90
1991-95
1996-2000
2001-05
2006-10
2011-15
Budget Balance
Saving Glut vars
Demography
Others
Current Account
CA Predicted


Korea: Current Account
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
-1.00%
-2.00%
1986-90
1991-95
1996-2000
2001-05
2006-10
2011-15
Budget Balance
Saving Glut vars
Demography
Others
Current Account
CA Predicted


Malaysia: Current Account
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
-2.00%
-4.00%
-6.00%
-8.00%
1986-90
1991-95
1996-2000
2001-05
2006-10
2011-15
Budget Balance
Saving Glut vars
Demography
Others
Current Account
CA Predicted


Singapore: Current Account
22.00%
20.00%
18.00%
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
-2.00%
-4.00%
1986-90
1991-95
1996-2000
2001-05
2006-10
2011-15
Budget Balance
Saving Glut vars
Demography
Others
Current Account
CA Predicted



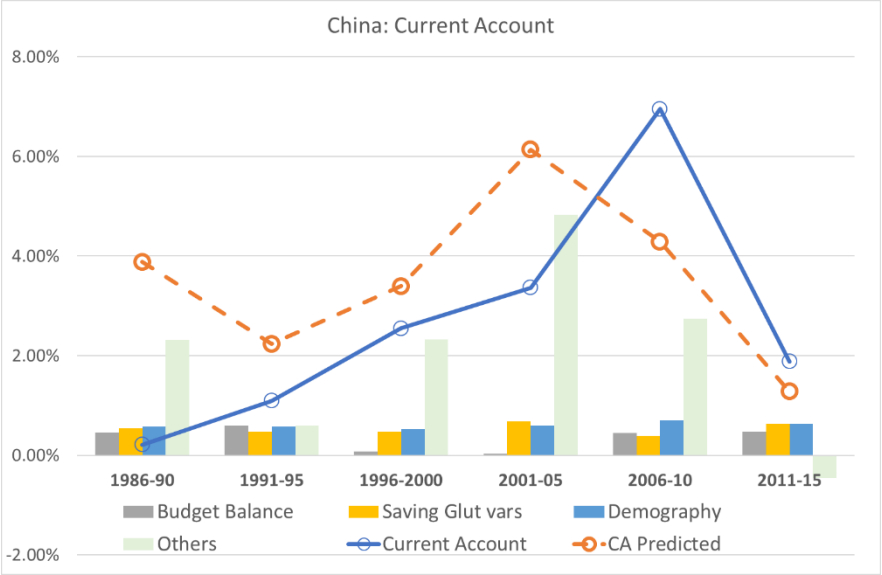


Figure 4: Current account balances and decompositions for select economies