3-2022

A Requiem for "Blame It on Beijing" Interpreting Rotating Global Current Account Surpluses

Menzie David Chinn
University of Wisconsin-Madison

Hiro Ito
Portland State University, ito@pdx.edu

NBER WORKING PAPER SERIES

A REQUIEM FOR "BLAME IT ON BEIJING": INTERPRETING ROTATING GLOBAL CURRENT ACCOUNT SURPLUSES

Menzie D. Chinn
Hiro Ito

Working Paper 26226
http://www.nber.org/papers/w26226

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
September 2019

We thank Joe Gagnon for providing data. Chinn and Ito acknowledge the financial support of faculty research funds of the University of Wisconsin and Portland State University, respectively The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

A Requiem for "Blame It on Beijing": Interpreting Rotating Global Current Account Surpluses
Menzie D. Chinn and Hiro Ito
NBER Working Paper No. 26226
September 2019
JEL No. F32,F41

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, we find that – as before – the observable manifestations of the factors driving the global saving glut have limited explanatory power for the time series variation in imbalances. Fiscal factors determine imbalances, and have accounted for a noticeable share of the recent variation in imbalances, including in the U.S. and Germany. For advanced economies, the financial component of the current account has been playing an increasing role to determine the movements of the account. Examining observable policy actions, it is 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 is clear that policy can influence global imbalances, although some component of the U.S. deficit will likely remain given the U.S. role in generating safe assets.

Menzie D. Chinn
Department of Economics
University of Wisconsin
1180 Observatory Drive
Madison, WI 53706
and NBER
mchinn@lafollette.wisc.edu

Hiro Ito
Portland State University
1721 SW Broadway, Suite 241
Portland, Oregon 97201
ito@pdx.edu

1. Introduction

Global imbalances have once again returned to the fore of discussion. In the first decade of the century, before the Global Financial Crisis (GFC) of 2008, large current imbalances came under the spotlight – the U.S. and several European countries ran large current account deficits, which appeared to have been financed by large current account surplus by China, other emerging markets in East Asia, and oil exporters. The nature and importance of expanding current account imbalances – 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 come under the spotlight again.

The comeback of current account imbalances of certain countries brings up the obvious question of whether one needs to be concerned about the persistence 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 is clear that the imbalances – if they did not disappear, they at least took a short holiday. Figure 1, based upon October 2018 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 2018 than one the eve of the global financial crisis. The total deficit was 2.4% of world GDP in 2006; in 2016, the corresponding estimated sum for the same groupings was 1.2% of world GDP. Admittedly imbalances rose in the immediate aftermath of the global recession, yet even then, the imbalance is back to 2009 levels. Moreover, the degree of imbalance is projected to further shrink over time.[1]

Examining the distribution of individual country balances, it appears that the dispersion of imbalances has also narrowed. Figure 2 depicts the distribution of current account balances, expressed as a share of country GDP, for 2000, 2007, and 2017. Clearly, the frequency of larger (around 20%) deficits and surpluses increased by the eve of the financial crisis. By the latest observation, the dispersion of current account balances had reverted largely back to 2000 levels. This point of comparison is apt to the extent that in all three cases, large parts of the world economy

[1] See also Berthou et al. (2018) and IMF (2018) for recent analyses.

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 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 we have used; of course tradition is hardly sufficient. However, we think the focus on current account balances as the signifier of imbalances is merited because it links up with the 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 more direct fashion than asset positions.

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 bounce back 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 presumption to forecast reductions in the imbalances. As it turns out, the IMF's projections on the eve of the financial crisis did not uniformly overpredict contraction in global imbalances.

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

[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.

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 they tell U.S. about the nature of these imbalances? Consider the durability of two current account balances: the U.S. 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, we 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, we 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 rose. 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 viewed the current account imbalances as the outcome of optimizing behaviour, where countries with bright growth prospects or relatively high degrees of impatience, ran deficits. We will 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 U.S. – fits into this category. A third view ascribed the imbalances to the export obsessed 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.

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

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. In order to smooth consumption, they borrow and save 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 or reductions in investment and government spending. The current account balances observed are optimal outcomes, and hence no concerns should arise; Obstfeld (2012) has called this the "consenting adults" view.[3]

What did 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. In the context of America in the 2000's, 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. For the United States, deficits could result from the relative attractiveness as a place to invest due to relatively high rates of return. This argument would have been more convincing if GDP growth were being 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

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

the United States takes place in the form of purchases of U.S. government securities – not purchases of American stocks or direct investment in its factories, as it did in the years leading up to 2000. 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.[4]

Formal empirical analyses directed specifically at explaining imbalances 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 U.S., the euro area and Japan, and found that a large share of the 2004-07 U.S. current account is inexplicable using their model.[5]

A 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.

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. The collision with contractionary monetary policy only exacerbated the deterioration, but was entirely

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

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 massive tax cuts seemed an altogether too obvious candidate.

Obviously, the twin deficits interpretation is a particularly simple one shock approach.[6] 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 period, 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 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

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

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.[7]

In sum, fiscal, structural and demographic factors account for a large portion of the variation in current account balances, across countries, and across time. Second, 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.

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.

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

[7] 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.

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? For a thorough critique, see Prasad and Wei (2005).

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 recent trends.

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 may help reduce the level of current account balances through reducing national saving. Alfaro, et al. (2008) and Gruber and Kamin (2007) 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 is 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) modeled the saving glut explanation as a shortage of safe assets in the developing world.[8] Safe assets – i.e., assets like U.S. Treasury securities that maintain their value in even the most adverse financial events – can be acquired in net by countries running a net surplus with those countries (or country) that can generate such assets, like the U.S..

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

[8] Mendoza, Quadrini and Rios-Rull (2009) model financial development as the increase in the degree of enforcement of financial contracts.

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.[9]

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.

We 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.

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 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

[9] 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.

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 (Obstfeld, et al. (2010)).

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.[10]

3. Updating the Evidence on Current Account Imbalances

In order to shed light on the strength of these various hypotheses, We estimate the following model based upon Chinn and Prasad (2003) as well as most recently Chinn, Eichengreen, and Ito (2014), which relates the current account balance to four sets of variables:

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

We estimate this model using panel data for 24 industrial and 138 developing countries between 1972 and 2016, using non-overlapping 5-year averages of the data, thereby permitting a

[10] 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.

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.[11] 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.[12]

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 not only their values may different systematically across these groupings.[13] We therefore estimate separate regressions for industrialized countries (IDC), developing countries (LDC) and emerging market economies (EMG), in addition to the full sample.[14]

It is 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

[11] 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 1972-76, 1977-1981, etc.
[12] 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.
[13] 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.
[14] Emerging economies are those classified as either emerging or frontier in 1980–1997 by the International Financial Corporation, plus Hong Kong and Singapore.

using either approach.[15]

3.2 Just the Basics

We 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 or models, explains a substantial share of the variation in current account balances, ranging from 0.28 to 0.50, depending on the country grouping (Table 1). The highest impact is for the industrial country grouping, highlighting the importance of the fiscal factor in external balances. In other words, a one percentage point increase in the fiscal deficit results in a 0.42 percentage point increase in the current account deficit. These estimates are relatively large compared the findings in Erceg et al. (2005), Bussière (2010), Corsetti and Muller (2006), and Gruber and Kamin (2007). To some extent, these new findings offset the earlier naysaying about an important role for fiscal policy.[16]

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.[17]

The fiscal balance is of less economic impact for the emerging market group countries. 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. The elderly dependency

[15] 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.

[16] 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.

[17] 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.

ratio is significantly negative for the group of EMGs.

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 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.[18]

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 is a mere quantity measure. In order to allow for some nuance in this variable, we interact the quantity measure with other institutional factors, to account for the quality of the financial intermediation. Specifically, we 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. The effect of financial development is mixed. While it is significantly positive for the group of less developing

[18] 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.

countries, it is not significant for the IDC or EMG group. Unlike in Chinn, Eichengreen and Ito (2014), we do not find as strong evidence for the hypothesis that countries with more developed financial markets have weaker current account balances. When it is coupled with more open capital accounts, the impact of financial development on the current account balance becomes negative but not significantly so. The impact of more open capital accounts alone appears negative, but again the effect is nowhere statistically significant.

Why the failure to replicate the results in Chinn, Eichengreen and Ito (2014)? It is not difficult to mechanically isolate the reason for the weakening of the saving glut variables. Dropping the 2012-2016 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 2012-2016 period is beset by such idiosyncratic shocks that the effect of these saving glut variables is 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, we fail to capture the role of safe assets. We 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 the same impact on the current account surplus as in the previous model, ranging from 0.29 to 0.51. 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 3 illustrates, for selected countries, the contributions of these factors to current account balances using the estimates corresponding to those in Table 2, with the left graph corresponding to the level and the right to changes. We group the variables 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.[19] 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.[20] Comparing these bars with actual current account balances

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

[20] 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 square nodes).

allows U.S. to infer the contribution of these different factors to the level and change in the current account. 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.
- 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 (and the United Kingdom to a lesser extent), although the budget balance is not the largest single contributor to the current account imbalance, it is a substantial factor. The contribution of the budget balance accounts for over one percentage point of the four percentage point deficit 2007-11 for the U.S. (about two percentage points of the four percentage point for the U.K.). Moreover, changes in the budget are highly correlated with changes in current account balances for these countries.
- For advanced economies, the "saving glut" variables have contributed to improving current accounts, i.e., the lack of financial development, legal development, financial openness, and their combinations would *worsen* current account balances. For emerging market economies, the lack of financial development, legal development, financial openness, and their combinations would *improve* current account balances, which applies for China and which is in line with the argument with the saving-glut hypothesis.
- The importance of the saving glut variables has dropped in the most recent 5 year and 10 year periods for which data are available. This suggests that different factors are driving imbalances over the crisis and post-crisis period.

The lack of importance of saving glut variables as proxied in the empirical work does not speak directly to the proposition that demand for safe assets such as U.S. Treasuries have driven at least the U.S. 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.[21] It is difficult to further identify this number with specifically a safe assets motivation in this aggregate cross-country framework.[22] However, the finding that the own-currency share in world foreign exchange reserves – a proxy variable for reserve currency status – shows up as *highly* statistically significant in Phillips et al. (2013) is further proof of the importance of the safe asset factor.

3.4 Net Official Flows

Now that we have *some* evidence for the saving glut, we can still keep exploring the relevance of the saving glut hypothesis by looking at the impact of net official flows. The capital flow from developing economies to the industrial countries, especially the United States, goes to the treasuries markets. In a sense, the capital flow to the treasuries markets is aimed at seeking for safe assets. The source of the capital flow comes from active interventions by developing countries. Hence, the question we can rephrase is, does intervention matter for current accounts?

This is not so much a "theory" as much as standard open economy macro theory, that recognizes that government intervention, showing up 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 0.33, 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 (with institutional indicators to account for overall financial development) leads to a noticeable increase in proportion of variation explained while the significance levels for the saving glut variables drop especially for

[21] 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 (2014).
[22] See for instance Bertaut et al. (2012).

the LDC and EMG groups, signifying the impact of official flows instead of private flows that tend to be captured by the saving glut variables.

Obviously, 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 reason for intervening, is for mercantilist reasons – 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, where we instrument the net official flow variable with a dummy for emerging market countries, an interaction term with relative income, the exchange rate stability index (from Aizenman, et al.; 2013), and the share of manufactured goods in total exports. For the IDC subsample, the lagged (5 year) net official flows variable is also included.

We obtain results are broadly supportive of the proposition that foreign exchange intervention is correlated with current account balances. The estimate on the variable for net official flows becomes larger in terms of both the magnitude and statistical significance (Table 4), suggesting policymakers do intervene after endogenously reacting to current accounts. Taken literally, the point estimates suggest for LDCs (EMGs), each one percentage point increase in intervention (as a share of GDP) results in a 1.81 (0.96) percentage point increase in the current account. If this is true, then intervention has had a large impact on current account imbalances.[23]

Figure 4 illustrates the contributions of the groups of explanatory variables, including net official flows, to current account balances using the estimates corresponding to those in Table 4.

While the sign of the estimate of net official flows is positive for both IDC and EMG, Figure 4 shows that for the U.S., U.K., and Germany, official capital inflows contribute negatively to their current account balances. This suggests that these countries are the providers of safe assets.

Among the EMGs, the contributions of net official flows to current accounts are large. China runs large surpluses in 2002-06 and 2007-11, and according to our estimates, the large surpluses are almost solely due to net official flows. Other Asian EMGs also have their large

[23] 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.

surpluses corresponding with active foreign exchange interventions.[24]

Turning directly to the imbalances of today, to the extent that intervention is largely reversing during this last period (2012-16), the net effect of intervention has been to *shrink* current account surpluses overall.

3.5 Re-assessment

The analyses so far show that the main driver for current account imbalances of major countries differ among them. The foregoing results suggest fiscal policy, while not necessarily central to the developments of the mid-2000s, can be an important determinant of imbalances, especially to industrialized countries such as the U.S. and the U.K. 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, and their impacts tend to be stable. 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, may have diminished in economic and statistical import over time. In previous analyses, they were seldom of central importance, but even then, time series variation in those observed factors were insufficient to explain the dramatic moves in imbalances over time. For European advanced economies, we see that the variance of current account is more driven by net primary income rather than net trade. Hence, the impact of variables related to financial development and openness seems to exist for some, but it can be often masked by the movements of net exports.

The lack of finance development can mean the lack of safe assets. That means looking at net official flows can be a supplement to measuring the impact of rather gross financial development or openness. For emerging Asian economies, net official flows are found to contribute a lot to the time variance of current account balances. Clearly, one model does not fit for all.

4. Conclusion

[24] Figure 4 also shows that the saving glut variables now have the opposite effects for emerging market economies. However, their contributions become smaller once net official flows are included in the estimation.

Large parts of the global economy have reached full employment; yet current account surpluses in some regions and deficits in others have meant 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 to some extent 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 to 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 U.S. 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 can now be readily dispensed with.

References

Abiad, A., Leigh, D. and Mody, A. 2007. "International Finance and Income Convergence: Europe is Different," *IMF Working Paper* No. 64, International Monetary Fund, Washington, D.C.

Aizenman, J., and J. Lee. 2007. "International Reserves: Precautionary versus Mercantilist Views, Theory and Evidence," *Open Economies Review* 18(2): 191-214.

Aizenman, J. and N. P. Marion, 2003. "The High Demand for International Reserves in the Far East: What's Going On?" *Journal of the Japanese and International Economies,* 17, 370-400.

Alfaro, L., S. Kalemli-Ozcan, and V. Volosovych. 2008. "Why Doesn't Capital Flow from Rich to Poor Countries? An Empirical Investigation," *Review of Economics and Statistics* 90, 347–368.

Bayoumi, T., J. Gagnon, and C. Saborowski, 2015, "Official Financial Flows, Capital Mobility, and Global Imbalances," *Journal of International Money and Finance* 52: 146-174.

Bergsten, C.F. and J. Gagnon, 2017, *Currency Conflict and Trade Policy: A new Strategy for the United States*, Peterson Institute for International Economics.

Bernanke, B., 2005. "The Global Saving Glut and the U.S. Current Account." Remarks at the Sandridge Lecture, Virginia Association of Economics, Richmond, VA, March 10.

Bertaut, Carol, Laurie Pounder DeMarco, Steven Kamin, and Ralph Tryon. 2012. "ABS Inflows to the United States and the Global Financial Crisis." *Journal of International Economics* 88(2): 219-234.

Berthout, Antoine, Matthieu Bussière, Laurent Ferrara, Sophie Haincourt, Francesco Pappadà and Julia Schmidt. 2019. "Global imbalances: build-up, unwinding and financial aspects." Bulletin de la Banque de France 220/6 – November December 2018.

Blanchard, O. and Giavazzi, F. 2002. "Current Account Deficits in the Euro Area: The End of the Feldstein-Horioka Puzzle?" *Brookings Papers on Economic Activity*, 2, 147-210.

Brainard, Lael. 2017. "Cross-Border Spillovers of Balance Sheet Normalization," speech presented at "Normalizing Central Banks' Balance Sheets: What Is the New Normal?" Columbia University's School of International and Public Affairs and the Federal Reserve Bank of New York, New York, New York, July 11.

Bussière, M. and M. Fratzscher, and G. J. Müller. 2010. "Productivity Shocks, Budget Deficits and the Current Account," *Journal of International Money and Finance*, 29, 1562-1579.

Caballero, R., E. Farhi, and P. O. Gourinchas. 2017. "The Safe Assets Shortage Conundrum," *Journal of Economic Perspectives* 31(3): 29–46.

Caballero, R., E. Farhi, and P. O. Gourinchas. 2008. "An Equilibrium Model of 'Global Imbalances' and Low Interest Rates," *American Economic Review*, 98, 358-393.

Chinn, M. 2012. "The Global Economy: The Prospects for Imbalances, Overheating, and the Recovery," in *Global Economic Crisis: Impacts, Transmission, and* Recovery, edited by M. Obstfeld, D. Cho, A. Mason, S.H. Lee (Korean Development Institute and East-West Center).

Chinn, M., 2005, “Getting Serious about the Twin Deficits,” *Council Special Report* 10. Council on Foreign Relations, New York.

Chinn, M. D., B. Eichengreen, and H. Ito. 2014. “A Forensic Analysis on Global Imbalances,” *Oxford Economic Papers* 66(2): 465-490.

Chinn, M.D., H. Ito. 2008. “Global Current Account Imbalances: American Fiscal Policy versus East Asian Savings,” *Review of International Economics* 16(3): 479-498

Chinn, M. D. and H. Ito. 2007. “Current Account Balances, Financial Development and Institutions: Assaying the World “Savings Glut,” *Journal of International Money and Finance*, 26: 546-569.

Chinn, M. and Hiro Ito, 2006. “What Matters for Financial Development? Capital Controls, Institutions, and Interactions.” *Journal of Development Economics*, 82: 163-192.

Chinn, Menzie, and Jeffrey A. Frankel, 2007, "Will the Euro Eventually Surpass the Dollar as Leading International Reserve Currency?." *G7 Current Account Imbalances: Sustainability and Adjustment*. University of Chicago Press, pp. 283-338.

Chinn, Menzie, and Jeffrey Frankel, 2008, "Why the euro will rival the dollar," *International Finance* 11(1): 49-73.

Corsetti, G. and G. J. Müller. 2006. “Twin Deficits: Squaring Theory, Evidence and Common Sense,” *Economic Policy* 21: 597–638.

Dooley, M., D. Folkerts-Landau, and P. Garber. 2009. "Bretton Woods II Still Defines the International Monetary System," *Pacific Economic Review* 14(3): 297-311.

Dooley, M. P., D. Folkerts-Landau, and P. Garber. 2007. "Direct Investment, Rising Real Wages and the Absorption of Excess Labor in the Periphery." *G7 Current Account Imbalances: Sustainability and Adjustment*. University of Chicago Press: 103-132.

Dooley, Michael P., David Folkerts-Landau, and Peter Garber. 2003. “An Essay on the Revived Bretton Woods System,” *NBER Working Paper* No. 9971.

Eichengreen, B. 2011. *Exorbitant Privilege: The rise and fall of the Dollar and the Future of the International Monetary System*. Oxford University Press.

Erceg, C. J., L. Guerrieri, and C. Gust. 2005. “Expansionary Fiscal Shocks and the U.S. Trade Deficit,” *International Finance*, 8: 363-397.

Frankel, J.A. 2006. "Global Imbalances and Low Interest Rates: An Equilibrium Model vs. a Disequilibrium Reality." BIS Annual Research Conference Brunnen, Switzerland, June 19-20, 2006.

Fratzscher, M. et al. 2014. “Increasing Investment in Germany,” Extract from the Report prepared by the Expert Commission on behalf of the Federal Minister for Economic Affairs and Energy, Sigmar Gabriel, 13 April 2014.

Gagnon, J. 2012. “Global Imbalances and Foreign Asset Expansion by Developing Economy Central Banks,” Peterson Institute for International Economics Working Paper No. 12-5, Peterson Institute for International Economics, Washington, D.C.

Gagnon, J., T. Bayoumi, J.M. Londono, C. Saborowski, and H. Sapriza. 2017. "Direct and Spillover Effects of Unconventional Monetary and Exchange Rate Policies." *Open*

Economies Review 28 (2): 191-232.

Gourinchas, P. O. and H. Rey. 2007. "From World Banker to World Venture Capitalist: U.S. External Adjustment and the Exorbitant Privilege," In: *G7 Current Account Imbalances: Sustainability and Adjustment*, 11-66, National Bureau of Economic Research, Cambridge, MA.

Gruber, J. W. and S. B. Kamin. 2007. "Explaining the Global Pattern of Current Account Imbalances," *Journal of International Money and Finance*, 26: 500-522.

IMF.2016, *2016 External Sector Report*, International Monetary Fund, July 27.

IMF. 2018. 2018 External Sector Report, International Monetary Fund, July 19.

Ito, H. and M.D. Chinn. 2009. "East Asia and Global Imbalances: Saving, Investment, and Financial Development". In T. Ito and A. Rose, ed., *Financial Sector Development in the Pacific Rim*, National Bureau of Economic Research-East Asian Seminar on Economics 18.

Lane, P.R., and G.M. Milesi-Ferretti. 2017. "International Financial Integration in the Aftermath of the Global Financial Crisis." *IMF Working Paper* No. 17/155 (May).

Lane, P. R. and G. M. Milesi-Ferretti. 2007. "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004," *Journal of International Economics* 73: 223-250.

Lucas, R. 1990. "Why Doesn't Capital Flow from Rich to Poor Countries?" *American Economic Review* 80: 92-96.

Mendoza, Enrique G., Vincenzo Quadrini, and Jose-Victor Rios-Rull. 2009. "Financial Integration, Financial Development, and Global Imbalances," *Journal of Political Economy* 117(3): 371-416.

Obstfeld, M. 2017. "Assessing Global Imbalances: The Nuts and Bolts," *IMF Blog*, June 26, 2017.

Obstfeld, M. 2012. "Does the Current Account Still Matter?" *NBER Working Paper* No. 17877 (March).

Obstfeld, M. 2011. "Financial Flows, Financial Crises, and Global Imbalances," *Journal of International Money and Finance* 31: 469-480.

Obstfeld, M., Shambaugh, J. C. and Taylor, A. M. 2010. "Financial Stability, the Trilemma, and International Reserves." *American Economic Journal: Macroeconomics*, 2: 57-94.

Phillips, S., L. Catão, L. Ricci, R. Bems, M. Das, J. Di Giovanni, D. Feliz Unsal, M. Castillo, J. Lee, J. Rodriguez and M. Vargas, 2013, "The External Balance Assessment (EBA) Methodology," *IMF Working Paper* No. 13/272 (December).

Prasad, E. 2011. "Rebalancing Growth in Asia" *International Finance* 14: 27–66.

Setser, B. 2016. "The Return of the East Asian Savings Glut." Discussion Paper (Council for Foreign Relations, October).

Truman, E. 2005. "Budget and External Deficits: Not Twins but the Same Family."

Appendix 1. Data

We provide below 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	0.481	0.422	0.499	0.277
	(0.061)***	(0.089)***	(0.069)***	(0.066)***
NFA (initial cond.)	0.027	0.015	0.028	-0.001
	(0.008)***	(0.009)*	(0.009)***	(0.004)
Relative income	0.050	0.051	0.045	0.190
	(0.015)***	(0.021)**	(0.022)**	(0.024)***
Relative income squared	-0.005	-0.015	-0.004	0.092
	(0.003)	(0.032)	(0.004)	(0.031)***
Relative dependency ratio (young)	-0.017	-0.037	-0.022	-0.030
	(0.010)*	(0.020)*	(0.013)*	(0.013)**
Relative dependency ratio (old)	-0.002	0.028	-0.005	-0.046
	(0.008)	(0.018)	(0.008)	(0.012)***
Fin Dev. - PCGDP	-0.004	0.001	0.003	0.009
	(0.007)	(0.009)	(0.011)	(0.010)
TOT volatility	0.075	-0.143	0.076	0.109
	(0.045)*	(0.143)	(0.048)	(0.075)
output growth, 5-yr avg	-0.276	0.086	-0.277	0.114
	(0.154)*	(0.222)	(0.154)*	(0.094)
Trade Openness	-0.015	0.020	-0.025	-0.015
	(0.006)***	(0.009)**	(0.008)***	(0.008)**
Dummy-2005	0.014	-0.007	0.019	0.024
	(0.015)	(0.012)	(0.020)	(0.012)**
Dummy-2010	-0.015	-0.012	-0.014	-0.009
	(0.015)	(0.011)	(0.021)	(0.012)
Dummy-2015	-0.013	0.014	-0.017	-0.013
	(0.015)	(0.012)	(0.021)	(0.011)
oil exporting countries	0.037		0.037	0.044
	(0.010)***		(0.011)***	(0.015)***
N	1,107	201	906	321
Adj. R2	0.39	0.44	0.38	0.47

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

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	IDC	LDC	EMG
	(1)	(2)	(3)	(4)
Gov't budget balance	0.483	0.339	0.507	0.291
	(0.055)***	(0.086)***	(0.064)***	(0.062)***
NFA (initial cond.)	0.035	0.016	0.034	0.033
	(0.004)***	(0.014)	(0.004)***	(0.006)***
Relative income	0.024	0.030	0.024	0.108
	(0.013)*	(0.028)	(0.014)*	(0.025)***
Relative income squared	-0.000	0.089	-0.000	0.039
	(0.002)	(0.071)	(0.003)	(0.026)
Relative dependency ratio (young)	-0.016	-0.063	-0.017	-0.011
	(0.010)*	(0.025)**	(0.012)	(0.012)
Relative dependency ratio (old)	0.004	0.032	0.003	-0.026
	(0.006)	(0.018)*	(0.007)	(0.012)**
Fin Dev. – PCGDP	0.002	0.004	0.028	-0.004
	(0.007)	(0.011)	(0.014)**	(0.019)
Legal	0.004	0.013	0.009	0.010
	(0.003)	(0.006)**	(0.005)*	(0.011)
pcgdp x legal	0.001	-0.018	0.009	0.002
	(0.003)	(0.013)	(0.004)**	(0.013)
Financial Openness (KAOPEN)	-0.002	-0.003	-0.001	-0.008
	(0.003)	(0.004)	(0.005)	(0.007)
KAOPEN x legal	0.001	0.011	0.000	0.002
	(0.001)	(0.004)***	(0.002)	(0.002)
KAOPEN x pcgdp	-0.001	0.014	0.001	-0.011
	(0.003)	(0.007)**	(0.004)	(0.007)
TOT volatility	0.078	-0.086	0.077	0.257
	(0.047)*	(0.145)	(0.049)	(0.077)***
output growth, 5-yr avg	-0.054	0.155	-0.070	0.032
	(0.090)	(0.199)	(0.095)	(0.088)
Trade Openness	-0.007	0.012	-0.020	-0.008
	(0.005)	(0.009)	(0.009)**	(0.010)
Dummy-2005	0.017	-0.001	0.020	0.034
	(0.008)**	(0.012)	(0.010)**	(0.013)***
Dummy-2010	-0.006	-0.004	-0.009	0.006
	(0.008)	(0.010)	(0.010)	(0.012)
Dummy-2015	-0.005	0.022	-0.015	0.004
	(0.008)	(0.013)*	(0.010)	(0.011)
oil exporting countries	0.027		0.030	0.027
	(0.011)**		(0.011)***	(0.015)*
N	912	193	719	316
Adj. R2	0.49	0.47	0.49	0.53

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

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 OLS Model Augmented with Net Official Flows

	FULL	IDC	LDC	EMG
	(1)	(2)	(3)	(4)
Gov't budget balance	0.415	0.328	0.445	0.282
	(0.059)***	(0.096)***	(0.069)***	(0.068)***
NFA (initial cond.)	0.031	0.008	0.029	0.031
	(0.004)***	(0.015)	(0.003)***	(0.006)***
Relative income	0.039	0.031	0.044	0.088
	(0.016)**	(0.031)	(0.018)**	(0.023)***
Relative income squared	-0.009	0.003	-0.010	0.024
	(0.008)	(0.086)	(0.009)	(0.025)
Relative dependency ratio (young)	-0.004	-0.061	-0.001	-0.016
	(0.011)	(0.028)**	(0.013)	(0.013)
Relative dependency ratio (old)	0.004	0.046	0.005	-0.024
	(0.008)	(0.022)**	(0.009)	(0.012)*
Net official flows	0.332	0.345	0.336	0.210
	(0.072)***	(0.193)*	(0.078)***	(0.069)***
Fin Dev. – PCGDP	-0.006	0.004	0.018	0.009
	(0.007)	(0.012)	(0.014)	(0.018)
Legal	0.003	0.012	0.010	0.017
	(0.003)	(0.007)	(0.005)*	(0.011)
pcgdp x legal	-0.000	-0.017	0.007	0.015
	(0.003)	(0.014)	(0.004)	(0.012)
Financial Openness (KAOPEN)	-0.001	-0.001	0.000	-0.013
	(0.003)	(0.004)	(0.005)	(0.006)**
KAOPEN x legal	0.002	0.013	0.002	0.001
	(0.001)	(0.005)***	(0.002)	(0.002)
KAOPEN x pcgdp	-0.003	0.020	-0.001	-0.016
	(0.004)	(0.009)**	(0.004)	(0.007)**
TOT volatility	0.098	-0.234	0.103	0.253
	(0.048)**	(0.147)	(0.050)**	(0.081)***
output growth, 5-yr avg	-0.204	0.152	-0.218	-0.106
	(0.076)***	(0.230)	(0.079)***	(0.095)
Trade Openness	-0.009	0.014	-0.024	-0.007
	(0.005)*	(0.010)	(0.008)***	(0.009)
Dummy-2005	0.029	0.009	0.026	0.035
	(0.008)***	(0.012)	(0.008)***	(0.009)***
Dummy-2010	0.008	0.004	-0.001	0.011
	(0.008)	(0.011)	(0.008)	(0.010)
Dummy-2015	0.008	0.028	-0.008	0.011
	(0.009)	(0.014)*	(0.009)	(0.009)
oil exporting countries	0.015		0.016	0.028
	(0.011)		(0.011)	(0.015)*
N	817	167	650	287
Adj. R2	0.55	0.50	0.57	0.58

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

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

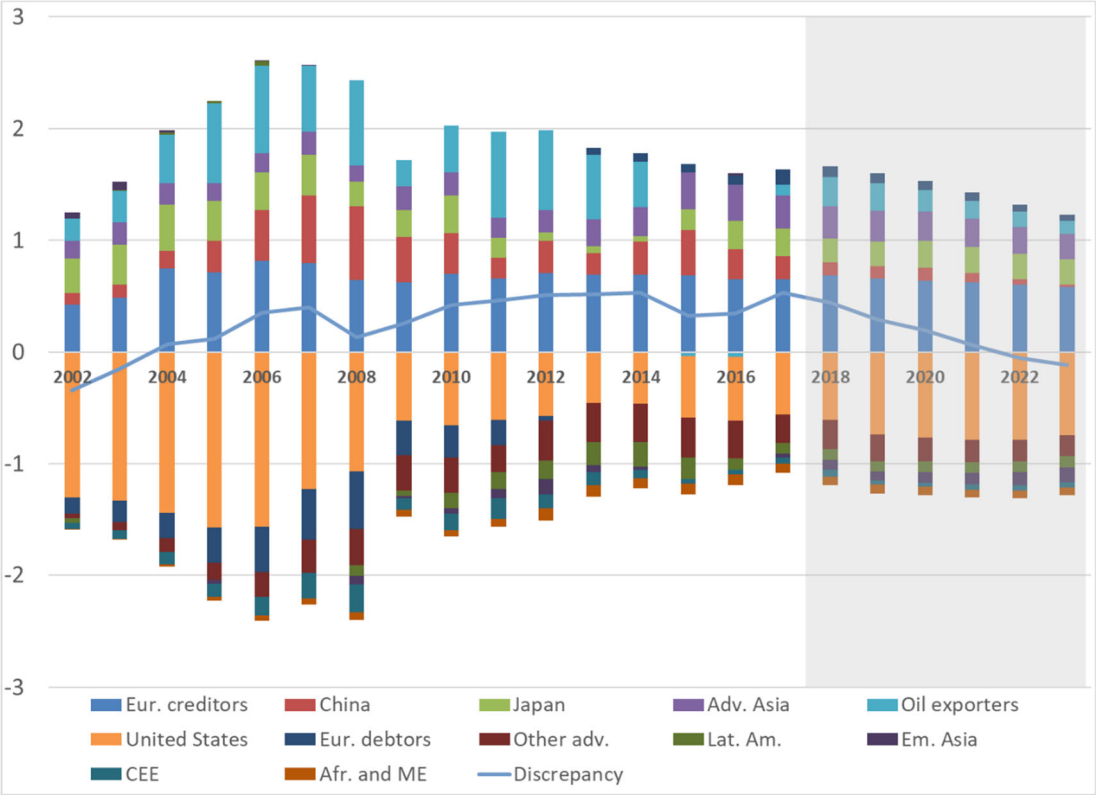
Table 4: Basic Model Augmented with Net Official Flows, Instrumented

	FULL (1)	IDC (2)	LDC (3)	EMG (4)
Gov't budget balance	0.074	0.217	0.015	0.087
	(0.136)	(0.118)*	(0.151)	(0.189)
Lane's NFA (initial cond.)	0.017	-0.013	0.020	0.018
	(0.010)*	(0.021)	(0.009)**	(0.011)
Relative income	0.013	0.024	0.008	0.047
	(0.030)	(0.042)	(0.040)	(0.050)
Relative income squared	-0.002	-0.250	0.005	0.018
	(0.019)	(0.172)	(0.023)	(0.048)
Relative dependency ratio (young)	0.039	-0.062	0.045	-0.021
	(0.031)	(0.034)*	(0.039)	(0.015)
Relative dependency ratio (old)	0.020	0.066	0.024	-0.013
	(0.024)	(0.027)**	(0.031)	(0.017)
Net official flows	1.623	1.536	1.805	0.962
	(0.422)***	(0.727)**	(0.445)***	(0.530)*
Fin Dev. - PCGDP	-0.007	0.010	0.013	0.048
	(0.010)	(0.016)	(0.021)	(0.041)
legal	0.002	0.007	0.007	0.036
	(0.007)	(0.009)	(0.013)	(0.018)**
pcgdp x legal	-0.005	-0.022	0.007	0.045
	(0.009)	(0.018)	(0.013)	(0.025)*
Financial Openness (KAOPEN)	0.004	0.006	-0.004	-0.017
	(0.006)	(0.007)	(0.006)	(0.007)**
KAOPEN x legal	0.004	0.015	0.001	0.003
	(0.002)**	(0.006)**	(0.002)	(0.002)
KAOPEN x pcgdp	-0.004	0.034	-0.007	-0.025
	(0.007)	(0.017)**	(0.007)	(0.008)***
TOT volatility	0.135	-0.603	0.154	0.251
	(0.065)**	(0.328)*	(0.073)**	(0.083)***
output growth, 5-yr avg	-0.483	0.376	-0.580	-0.325
	(0.161)***	(0.257)	(0.201)***	(0.206)
Trade Openness	-0.006	0.017	-0.009	-0.014
	(0.008)	(0.015)	(0.011)	(0.015)
Dummy-2006	0.004	0.021	-0.006	0.012
	(0.012)	(0.016)	(0.017)	(0.020)
Dummy-2011	-0.009	0.012	-0.016	-0.002
	(0.011)	(0.014)	(0.016)	(0.015)
Dummy-2016	-0.005	0.028	-0.016	0.003
	(0.011)	(0.019)	(0.016)	(0.014)
oil exporting countries	-0.006		-0.006	0.009
	(0.016)		(0.018)	(0.020)
N	687	146	541	250
Adj. R2	0.10	0.31	-0.02	0.43

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

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, WEO, October 2018.

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

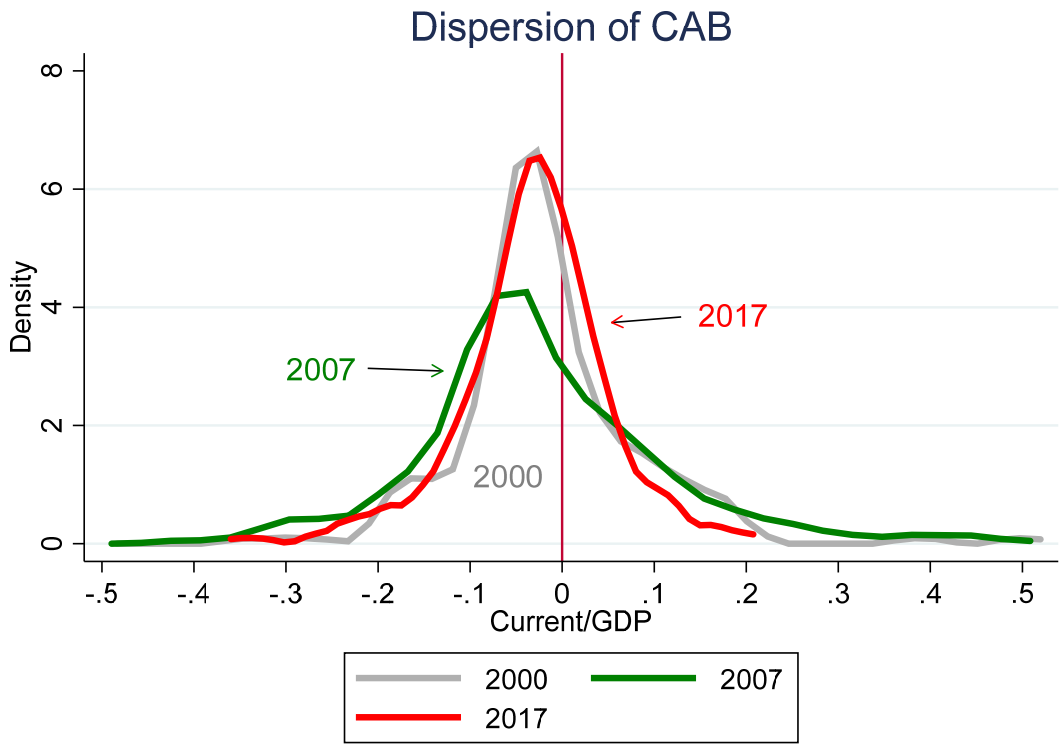


Figure 3: Current account balances and decompositions

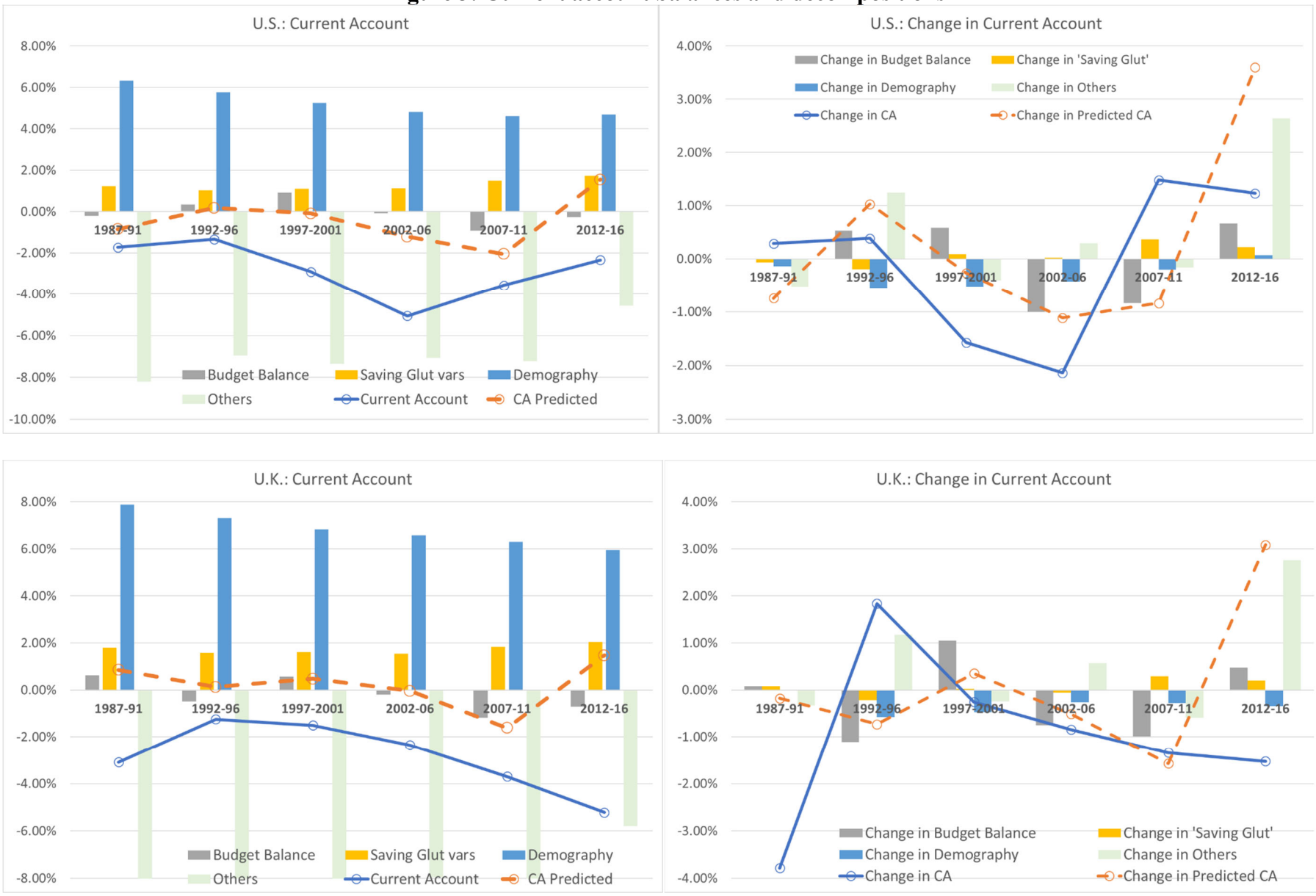


Figure 3: Current account balances and decompositions, continued

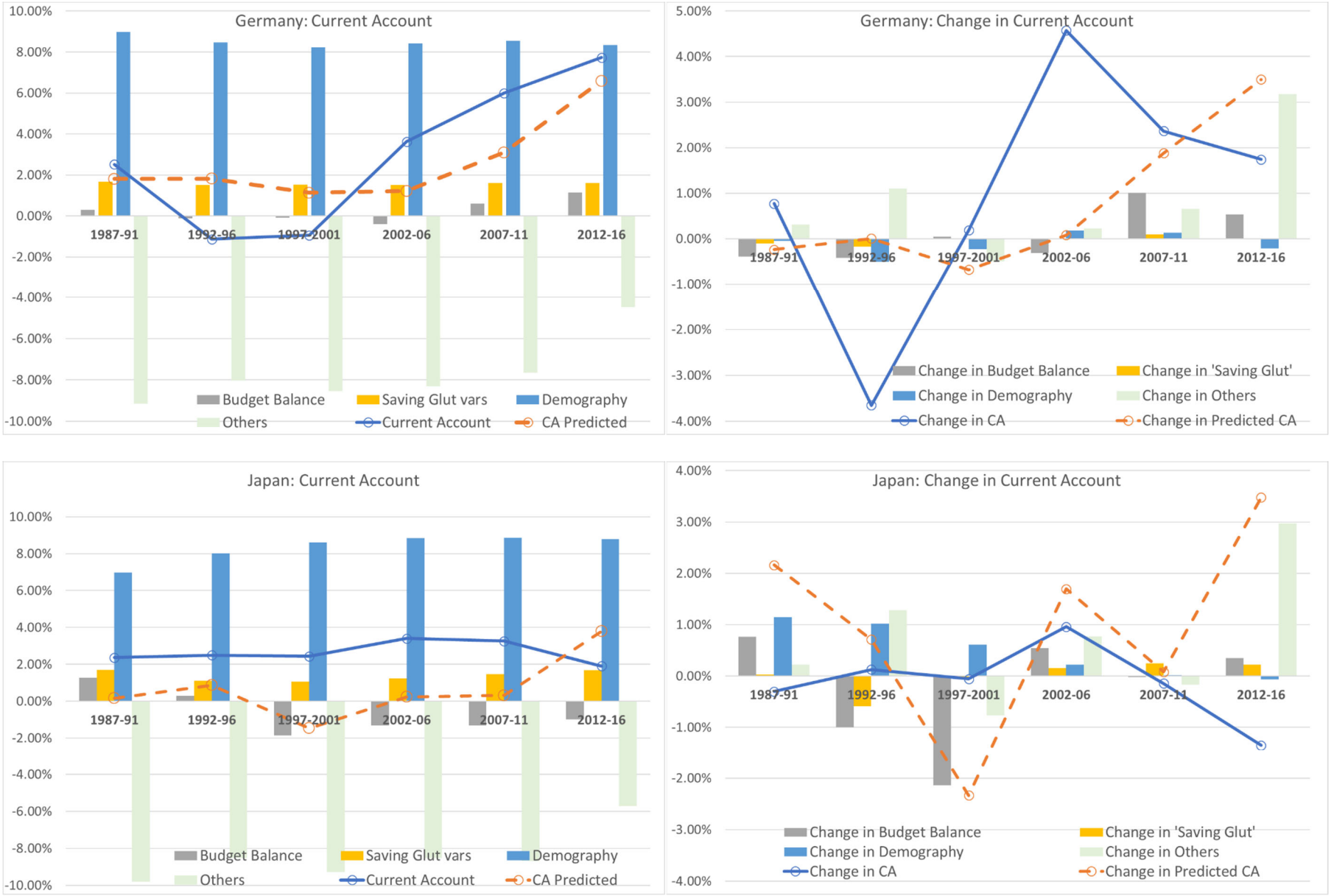


Figure 3: Current account balances and decompositions, continued

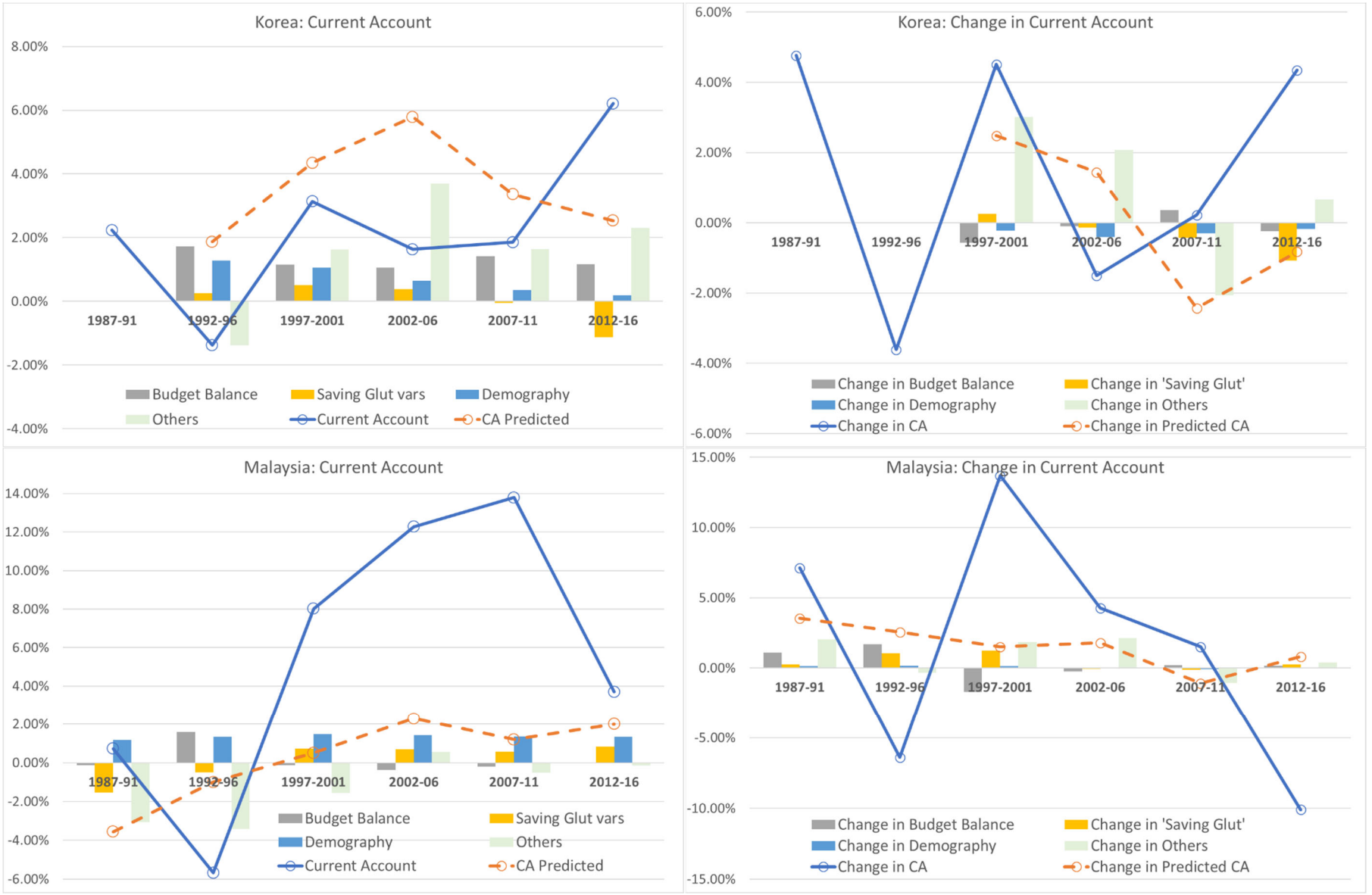


Figure 3: Current account balances and decompositions, continued

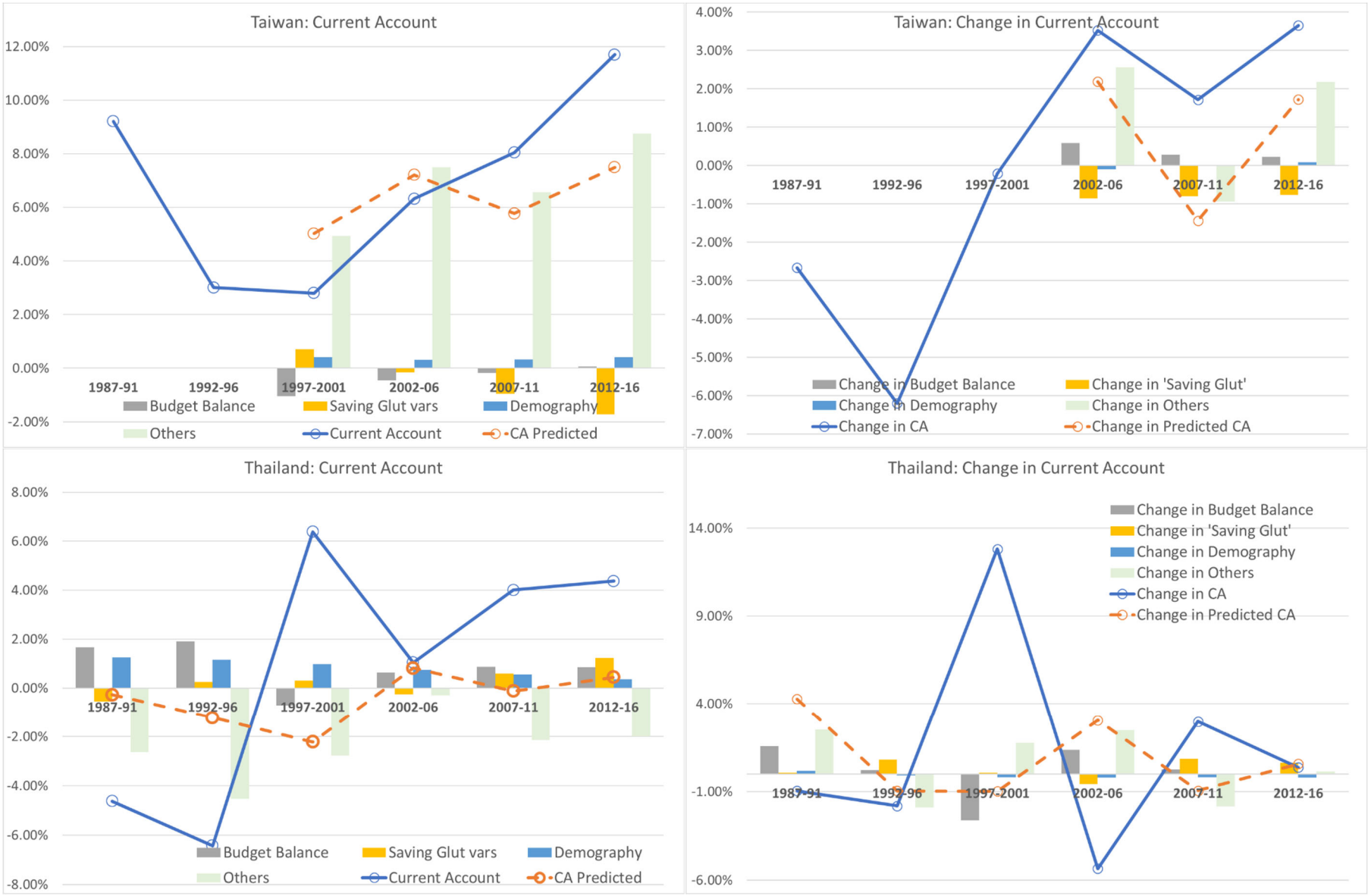


Figure 3: Current account balances and decompositions, continued

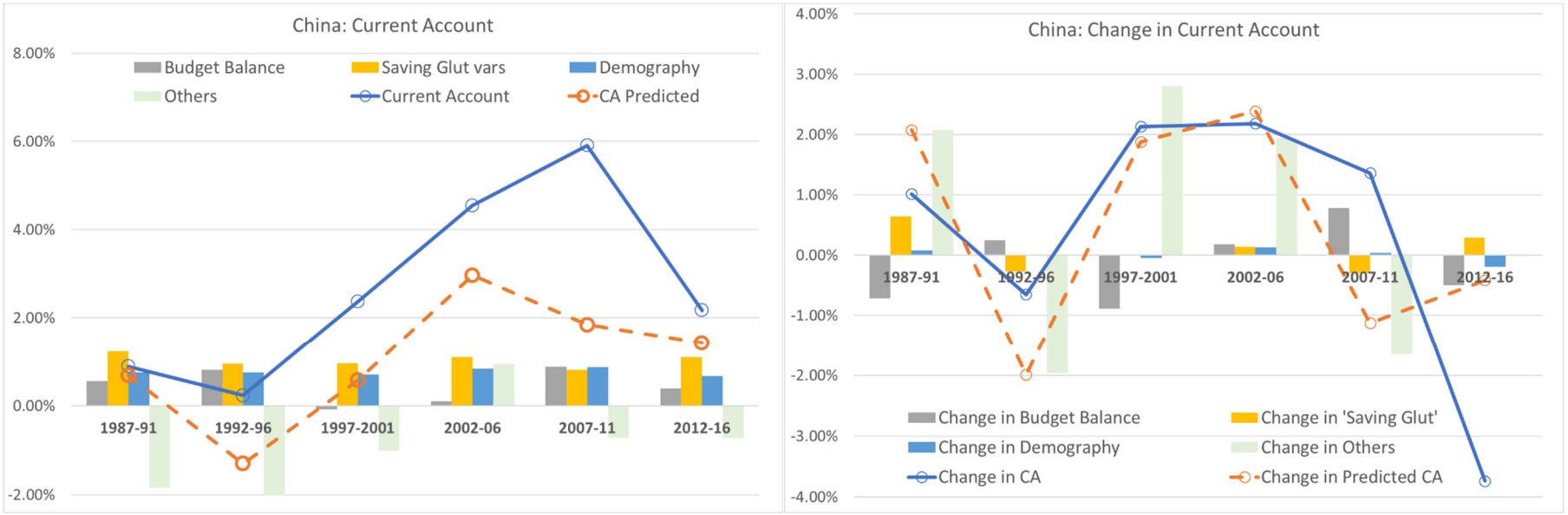
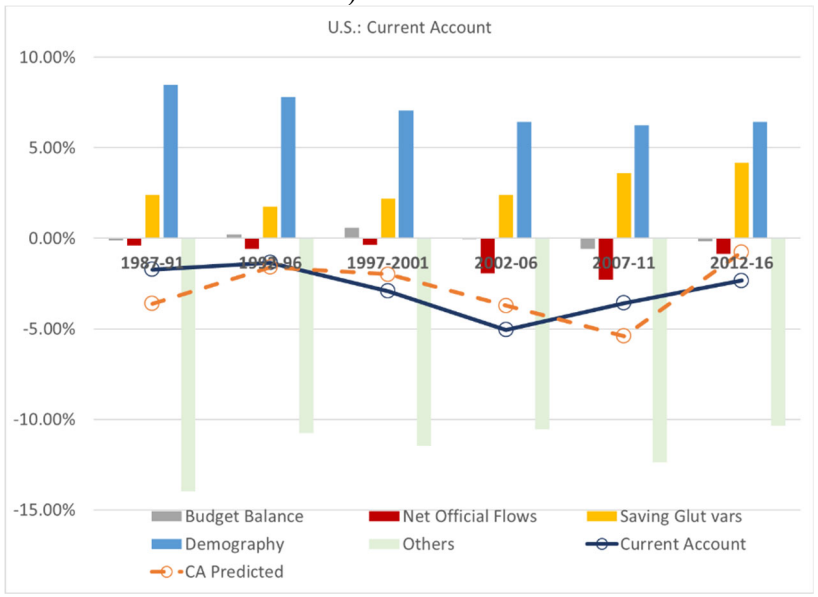
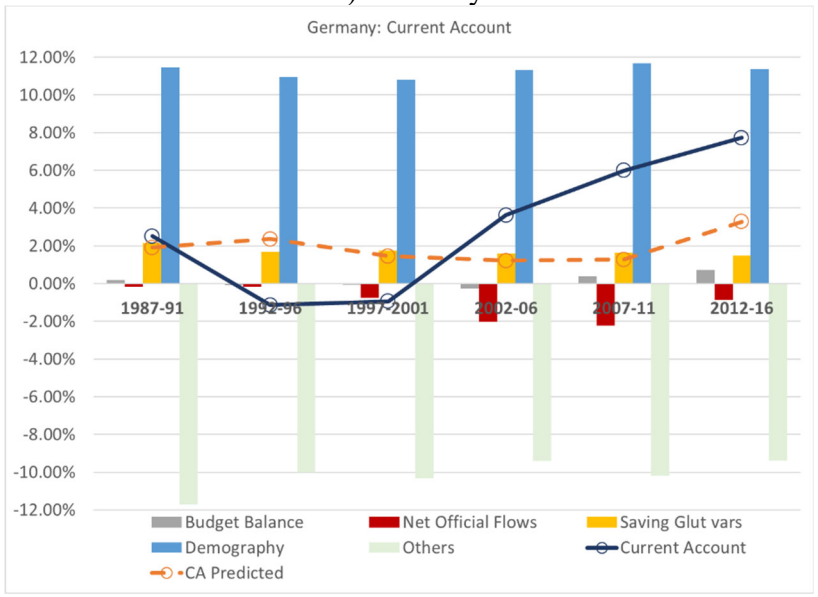


Figure 4: Current account balances and decompositions, augmented with net official flows

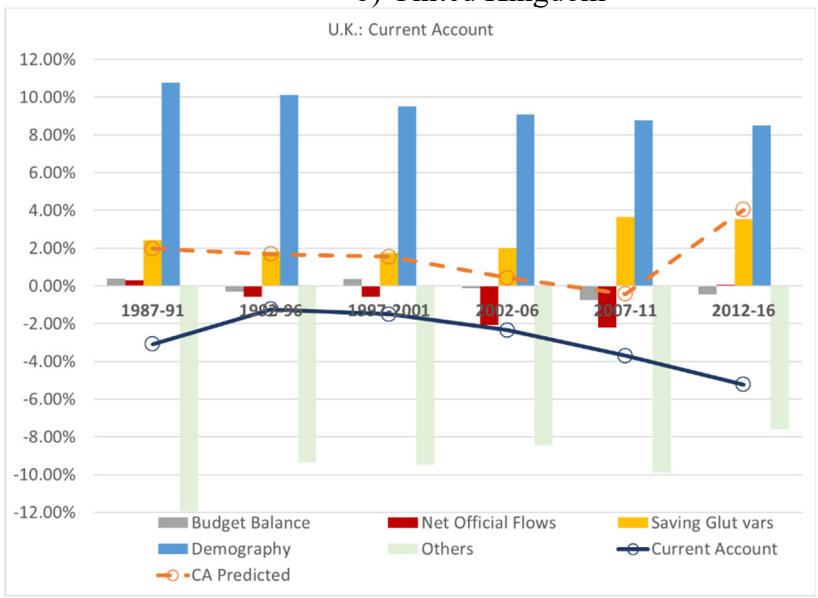
a) United States



c) Germany



b) United Kingdom



d) Japan

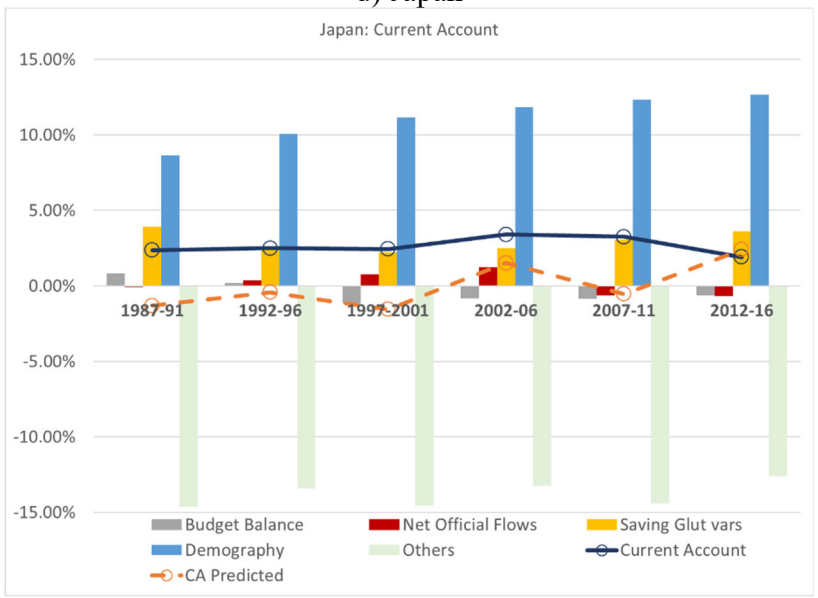
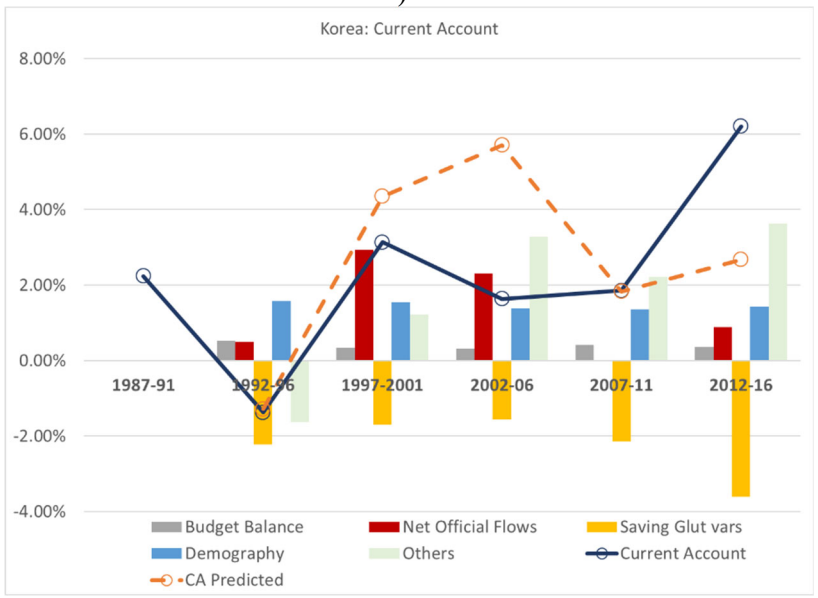
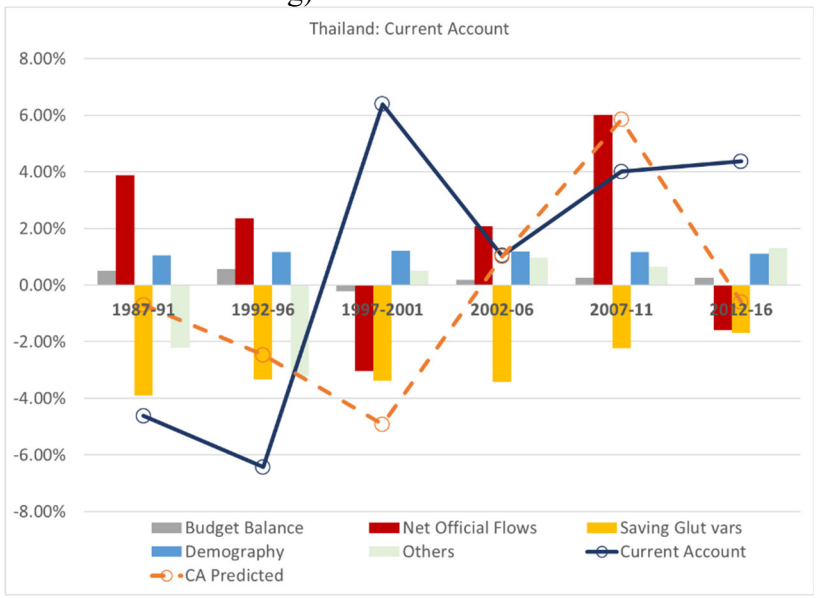


Figure 4: Current account balances and decompositions, augmented with net official flows, continued

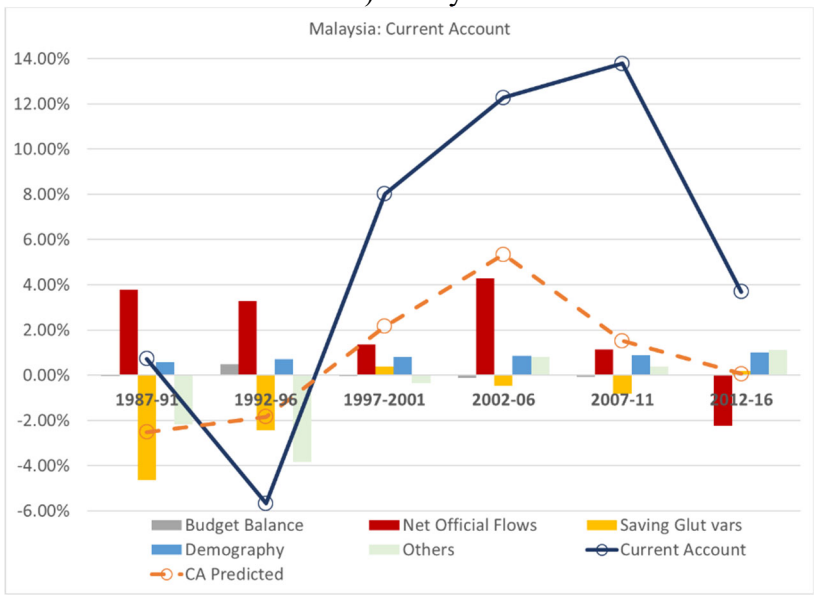
e) Korea



g) Thailand



f) Malaysia



h) China