Forthcoming, *Journal of Macroeconomics*

November 2009

Globalization and the Sustainability of Large Current Account Imbalances: Size Matters*

Joshua Aizenman and Yi Sun
UCSC & NBER; UCSC

Abstract

This paper evaluates the sustainability of large current account imbalances in the era when the Chinese GDP growth rate and current account/GDP exceed 10%. We investigate the size distribution and the durability of current account deficits during 1966-2005, and report the results of a simulation that relies on the adding-up property of global current account balances. Excluding the US, we find that size does matter: the length of current account deficit spells is negatively related to the relative size of the countries' GDP. We conclude that the continuation of the fast growth rate of China, while maintaining its large current account/GPD surpluses, would be constrained by the limited sustainability of the larger current account deficits/GDP of courtiers that grow at a much slower rate. Consequently, short of the emergence of a "new demander of last resort," the Chinese growth path would be challenged by its own success.

Joshua Aizenman
Economics E2
UCSC
Santa Cruz
CA, 95064
jaizen@ucsc.edu

Yi Sun
Economics E2
UCSC
Santa Cruz
CA, 95064
ysun@ucsc.edu

JEL classification: F15, F21, F32, F43
Keywords: current account imbalances, growth, size, adding-up property

* Useful comments by Menzie Chinn, Mike Dooley, Jeff Frankel and the seminar participants at UCSC and University of Washington, the AEA San Francisco 2009 meeting, and an anonymous referee are gratefully acknowledged. Any errors are ours.

1. Introduction and overview

The growing globalization of financial markets has led to a burgeoning debate about the sustainability and the desirability of global imbalances. While the rush to reform in the early 1990s was propagated by the hope that external financing would alleviate the scarcity of saving in developing countries, the record of the last two decades indicates that this has not been the case. Financial globalization has led to deeper financial diversification, a growing importance of foreign direct investment, but to no significant increase in the net resources available to finance the growth of developing countries. Intriguingly, faster growing emerging markets, on average, more than self financed their growth, running overtime significant current account surpluses.[1] Prime examples of this trend are the East Asian emerging markets, where China accelerated its GDP growth from about 7% at the end of the 1990s, to more than 10% in recent years, increasing its current account/GDP from about 2% to about 10% during that period, hoarding most of the recent surpluses in the form of international reserves. The mirror image of the growing current account surplus of China has been the growing current account deficit of the US, approaching about 7% of the US GDP in 2005.

The above developments have led to contentious discussions regarding the desirability and durability of these trends. The rosy view has been that these patterns reflect the superior capacity of the US to provide financial intermediation relative to that of emerging markets, and the viability of productive investment opportunities in the US at times when its saving rate has not matched its investment demand. In these circumstances, the high saving rates of China, exceeding its investment rates, conveniently finance the US excess demand for funds.[2] A Panglossian view linked the Chinese current account surplus and its hoarding of international reserves to China's desire to promote export led growth by undervaluation, where international reserves serve as collateral that secures the continuation of FDI inflows. Accordingly, these imbalances reflect the differential comparative advantage of the parties involved, and are consistent with an efficient allocation of global savings, where the

[1] See Aizenman, Brian and Radziwill (2007); Prasad, Rajan, and Subramanian (2007), and Gourinchas and Jeanne (2006) for discussions on the association between growth and current account patterns.

[2] See Dooley, Folkerts-Landau and Garber (2004a), Cooper (2005), Caballero, Farhi and Gourinchas (2008), Blanchard (2007) and Ju and Wei (2007).

globalization of markets generates mutual gains for China, the US, and other involved parties.[3]

A less buoyant interpretation pointed out that the East Asian saving glut has been partially driven by "investment draught" – the sizable drop of investment there in the aftermath of the East Asian Crisis of 1997-8. While these events allowed the US to finance its growing current account deficit at a relatively low cost, it put in motion forces that overtime could destabilize the global economy, especially if the US would overplay its ability to access cheap global credit. Accordingly, the sustainability of the recent global imbalances is conditional on the willingness of the US to be the "demander of last resort" - needed to accommodate the mercantilist drive of China, as well as the willingness of East Asia to hoard international reserves and to maintain large net saving positions.[4]

The purpose of our paper is to point out that, in evaluating the sustainability of recent trends, size matters. A small country embarking on an export led growth, like China in 1980, can sustain it without imposing negative ripple effects as long as its relative size remains small. However, the long run success of the Chinese growth strategy put in motion forces that would curtail the sustainability of a high GDP growth rate and a large current account surplus path. By now, China has reached a critical mass of "an elephant running in a China store." The continuation of the fast growth rate of China, while maintaining large current account/GPD surpluses, would be conditional on the sustainability of larger current account deficit/GDP of countries that grow at a much slower rate. We illustrate this point by investigating the size distribution and the durability of current account deficits, and by a simulation that relies on the adding-up property of current account balances, which, up to statistical discrepancies, should sum-up to zero. We find that, with the exception of the US, the duration of spells of current account deficits depend negatively on the relative size of a country, as measured by its GDP/World GDP. The simulation suggests that the continuation of the present path of the Chinese GDP growth, exceeding 10% a year while sustaining a current account/GDP of 10 %, would require large increases in the current account/GDP of large players, like the US.

The above suggests that, short of the emergence of a new demander of last resort, one would expect the unwinding of global imbalances in the coming years. This follows the observation that the US is already facing the "stabilization blues." The housing market weaknesses represent only one

[3] For various interpretations of the large hoarding of international reserves and global imbalances see Aizenman and Lee (2007), Dooley, Folkerts-Landau and Garber (2004b), Jeanne and Rancière (2006), and Eichengreen and Park (2006).

[4] See Roubini (2006), Setser (2006), Edwards (2004, 2005, 2007), Chinn and Ito (2005), Obstfeld and Rogoff (2005) for further discussions on global balance sustainability.

indicator that, in due course, will reduce consumption and increase saving, curtailing US current account deficits. Some of the adjustment has started: the current account deficit of the US peaked at about 7% in the last quarter of 2005, approaching now about 5 %.[5] The unwinding of global imbalances may be facilitated by a gradual shift of China from export led growth, toward a balanced growth of internal demand, a strategy that may be consistent with the continuation of Chinese employment and GDP growth [see Feenstra and Hong (2007)]. The unwinding of the current account deficit of the US, the growing pressure from Europe and the US regarding the Renminbi appreciation, and the greater tacit protection from the EU and the US may provide a further impetus for Asian countries to switch towards domestic demand policies.

2. Implication of global budget constraints

A fundamental consequence of the global budget constraint is that, up to statistical discrepancies, the sum of all current account surpluses [$Cu.Ac_i$] in a common currency adds up to zero:

$$(1) \quad \sum_i Cu.Ac_i = 0$$

This adding up property may also be expressed as a weighted average of current account/GDP ratios -- the current account/GDP of country *i* [$Cu.Ac_i / GDP_i$] weighted by the global share of the GDP of country *i* ($s_i = GDP_i / \sum_j GDP_j$) should add up to zero, where all variables are measured in terms of common currency:

$$(1') \quad \sum_i s_i \frac{Cu.Ac_i}{GDP_i} = 0; \quad s_i = GDP_i / \sum_j GDP_j .$$

This adding up condition has an important implication. Suppose that China would keep its high GDP growth rate of 10%, while maintaining a current account surplus of 10% for the next twenty years, while all GDP of all the other countries' [AOC] grow at their average growth rate during 1990-2005, at about

[5] The speed of this adjustment depends on the lag with which consumers are internalizing changes in their house equity and in their financial portfolio valuation. The growing fiscal uncertainty in the US and the declining appetite for US bonds by foreign Central Banks suggests the continuation of the weak dollar until the resolution of the underlying uncertainties. The sub prime crisis also suggests that the alleged superior intermediation capacity of the US overstated the evidence.

3%. The global budget constraint implies that this configuration is sustainable only if AOC would increase overtime their current account deficit as needed, matching the growing global share of China's current account surplus. Specifically, denote the AOC and Chinese GDP at time zero by $GDP_{AOC,0}$ and $GDP_{C,0}$, respectively, and the current account/GDP ratio of AOC and China at time t by $cu_{AOC,t}$, $cu_{C,t}$, respectively. Under the above assumptions [Chinese and AOC GDP's growth rates of 10% and 3%, respectively, China will maintain current account surplus/GDP of 10%], (1) implies that

$$(2) \quad 0.1GDP_{C,0}\exp(0.1t) + cu_{AOC,t}GDP_{AOC,0}\exp(0.03t) = 0$$

Hence,

$$(3) \quad cu_{AOC,t} = -0.1\exp(0.07t)\frac{GDP_{C,0}}{GDP_{AOC,0}}.$$

The current account deficit/GDP of AOC would increase at a rate equal to the difference of China's and AOC's GDP growth rates (0.1 - 0.03=0.07), and is proportionate to the Chinese current account surplus/GDP ratio (0.1) times the initial relative scale of Chinese to AOC's GDP ($GDP_{C,0}/GDP_{AOC,0}$). Figure 1 projects the future current account deficit/GDP implied by equation (3) under several scenarios regarding the behavior of AOC. The lowest curve corresponds to the case where, with the exception of China, all countries will share equally the burden of the adjustment, hence $GDP_{AOC,0}/GDP_{WORLD,0}$ is about 0.95 [corresponding to the global GDP share of AOC in 2006, measured in current US dollar]. In this scenario, the current account deficit/GDP of AOCs will double in ten years, from about 0.55% to about 1.1%.

The resultant scenario, however, depends crucially on the relative size of the block of AOC. To grasp the issues at hand, Table 1 summarizes the average patterns of current account balances across countries during 1990-2005.[6] Note that about half of the global GDP is produced by countries that run average current account deficits exceeding 0.5% during the last fifteen years. We presume that countries that run current account surpluses or small deficits (below 0.5% of their GDP) for prolonged periods do it by choice. Prolonged current account surpluses may reflect a social contract that opposes

[6] Interestingly, less than a quarter of all the countries run on average current account surpluses, yet they accounted for more than 40% of the global GDP. The combined GDP share of the countries that run an average current account deficit exceeding 2% was about 40% of the global GDP, and their growth rate about 3%.

significant net imports, or supports net export positions.[7] In these circumstances, the adjustment to the future Chinese current account surplus would be carried by countries whose combined global GDP share is about 0.5. Specifically, note that a generalization of (3) for the case of a large number of countries is

$$(4) \quad 0.1GDP_{C,0}\exp(0.1t)+\sum_{i\neq C} cu_{i,t}GDP_{i,0}\exp(g_i t)=0;$$

where g_i is the GDP growth rate of country i. Equation (4) implies that, as long as the countries that run current account surpluses are not switching to running deficits, aggregating all the countries that run current account deficits into one block would understate the needed adjustment:

$$(4') \quad 0.1GDP_{C,0}\exp(0.1t)+\sum_{i\neq C,\ cu_i<0} cu_{i,t}GDP_{i,0}\exp(g_i t)<0.$$

Table 1 indicates that the average growth rate of the block of countries running current account deficits in 1990-2005 was about 3%, thus

$$(5) \quad \sum_{i\neq C,\ cu_i<0} cu_{i,t}\tilde{s}_{i,0} < -0.1\exp(0.07t)\frac{GDP_{C,0}}{\sum_{i\neq C,\ cu_i<0} GDP_{i,0}}, \text{ where } \tilde{s}_{i,0}=\frac{GDP_{i,0}}{\sum_{i\neq C,\ cu_i<0} GDP_{i,0}} \text{ is the GDP}$$

share of country i in the block of countries that run current account deficits, hence $\sum_{i\neq C,\ cu_i<0}\tilde{s}_{i,0}=1$.

Denoting the block of AOC that run deficits by AOCD, and $\sum_{i\neq C,\ cu_i<0} cu_{i,t}\tilde{s}_{i,0}$ by $cu_{AOCD,t}$, we infer that

$$(6) \quad cu_{AOCD,t} < -0.1\exp(0.07t)\frac{GDP_{C,0}}{GDP_{AOC,0}}\frac{GDP_{AOC,0}}{GDP_{AOCD,0}} \cong -0.2\exp(0.07t)\frac{GDP_{C,0}}{GDP_{AOC,0}}$$

[7] This presumption is consistent with the finding of Faruqee and Lee (2006), reporting high persistency in the patterns of current accounts -- countries tend to run imbalances of the *same* sign (either positive or negative) as in the past.

The case where the current account adjustment is done by the AOCD block is portrayed in Figure 1 by the bold curve, which understates the needed adjustment of the deficit block. To start, the average current account/GDP deficit of the AOC block is about 1.1% [where the block is defined by the countries that run current prolonged current account deficits, producing about half of the initial global GDP]. Accommodating Chinese GDP growth and its current account surpluses of 10% would imply that the current account deficit/GDP of the adjusting block will double within ten years, to about 2.2%. Yet, as Table 1 illustrates, the GDP share of the countries that run current account/GDP deficits above 2% during the last fifteen years was about 0.38, well below the assumed share of 0.5. If the bulk of the needed adjustment will be carried by this smaller block, it would imply that their current account deficit/GDP would approach 3% within ten years, as is portrayed by the top curve in Figure 1.

To get further insight about key players, we focus now on the distribution of the average current account/ World GDP, dubbed "cursize," of 151 countries during 1990-2005. Figure 2 provides the histogram of "cursize." Closer inspection of the histogram indicates pronounced asymmetry in the tails of the size distribution. There are only six countries in the sample whose average current account deficit exceeded 0.025% of the global GDP (US, UK, Mexico, Australia, Spain and Brazil). Out of these countries, the US was the dominant "spender of last resort," being the only country whose cursize approached -1% of the global GDP (-0.86% to be precise). The US current account deficit/World GDP dwarfed the deficits of each of the other 5 countries in the group by a factor exceeding 10, and the sum of the current account deficits/World GDP of the UK, Mexico, Australia, Spain and Brazil was about third of the US (-0.26% versus -0.86%). For more than half of the sample, 80 countries, their average current account deficit/World GDP was smaller than 0.0025%. The combined current account deficit of all these countries was about 0.06%, less than tenth of the US average current account deficit/World GDP.

On the flip side of the global current account balances, there were 10 countries whose average current account surplus exceeded 0.025% of the global GDP. Japan was the only country whose relative current account surplus approached 0.5% of the global GDP (it was 0.4%), followed by China, with a relative current account surplus of about fifth of Japan's (0.085%).[8] These calculations, however, are backward-looking, and thereby they tend to understate the future importance of China. These considerations also suggest that the continuation of the recent patterns of the Chinese fast GDP growth

[8] The combined sum of the other 8 significant surplus countries was well below that of Japan, totaling 0.35%.

while running a large current account/GDP surplus depends critically on the willingness of some large countries to increase their current account deficit/GDP at a dramatic rate.

Figure 3 plots the association between average annual current account deficit/ WGDP (avgCAs) and the sum of Cum.CAs [where Cum.CAs (= avgCAs*length of the deficit spell)]. This graph is based on the data of all current account deficit spells from our sample, 1966-2005 (429 episodes). U.S. Current account deficit spells are represented by the round bold dots, other countries current account deficit spells are represented by triangles. The cumulative spells of all current account deficits during 1966-2005 added to about half of the World GDP. Note the unique role of the US -- most of the points associated with sizable current cumulative account deficits, exceeding 0.1 % of World GDP, were run by the US, accounting for more than **half** of the global cumulative current account deficits.[9]

2.1 Duration analysis of current account deficits

To start, we assembled the data about the duration of current account deficits of all countries, subject to data availability during 1966-2005 (see data appendix for more details about the sample). In order to verify the degree to which size matters, we constructed a variable "Avg.GDPs," measuring the average ratio of a country's GDP to world GDP (WGDP) during the current account deficit episode. Next, we run life survival regressions (used to account for censoring issues) explaining the duration of current account deficits on the relative size of a country. The results are reported in Table 2. Intriguingly, we found that there is a robust negative association between size and the duration of deficits for all countries excluding the US. These results continue to hold, controlling for the countries' net external asset position/GDP in the starting year of a current account episode [Ini.EWN], and the average growth rate of a country's real GDP (Avg.GDPg). Interestingly, a higher net external asset position/GDP is associated with shorter spells of current account deficits, possibly reflecting self insurance and a more conservative management of demand policies. The association between size and the duration of deficits weakens considerably for all countries *including* the US, and **becomes insignificant** once that we control for countries' net external asset position/GDP and the average growth

[9] The unique role of the U.S. is also manifested by the observation that all the current account deficit spells of all the other countries are along the concave part of the curve in Figure 3, whereas the U.S. current account deficit spells are contributing to the convex part of that curve. These observations suggest that a drop in the U.S. current account deficits that is not matched by the emergence of 'new spender of last resort' would induce forces shrinking the current account surpluses of net savers countries. Indeed, the patterns of current accounts during 2008-9 confirm these patterns: the drop of the U.S. current account/GDP deficit from about 6% in 2005 to about 3% in 2009 has been associated with a drop in the Chinese current account/GDP surpluses, from about 10% to about 7% in 2009 [the 2009 data is based on the Economist Intelligence Unit forecast, *The Economist*, June 2009].

rate of a country's real GDP. Figure 4 plot the regression line associations between relative GDP size and the duration of current account deficit spells [equations 1 and 2 in Table 2], without the US. To gain further insight, we turn now to an empirical analysis of the factors that determine the duration of sizable current account deficits.

2.2 Current account size and GDP growth

Table 3 reports the association between the current account/GDP and economic growth. Excluding 5 episodes of small countries experiencing collapsing GDP growth (below – 50%) or very large current account deficits (exceeding – 70%), we find a robust positive association between economic growth and current account/GDP.[10] Table 4 reports the association between economic growth and current account/GDP, reporting a similar positive association. These tables validate the finding that faster growth is associated, on average, with higher current account/GDP.

The first column in these two tables uses the basic estimates, in which we only include GDP growth and per capita GDP as our regressors. In the second column we include the time dummies to prevent the most likely form of cross-individual correlation, contemporaneous correlation. The third column extends our sample to a longer time period. All of these regressions find positive association between economic growth and current account/GDP. However there are several well known problems with this kind of OLS estimation. The first difficulty is that of omitted variables. Some unobserved individual-specific factors may be correlated with our regressors. This implies that the least square parameter estimates are biased since the regressors are correlated with the error terms. Another potential problem with this estimation is that the right-hand-side variables are endogenous, which also implies that the regressor and error terms are correlated in the regression. This, again, violates the assumption necessary for the consistency of the OLS, and potentially biases the OLS estimate.

One prominent way to address these problems has been through first-differenced GMM estimators applied to dynamic panel data models. The basic idea is to take first differences of the regression equation to remove unobserved time-invariant country-specific effects, and then instrument the right hand side variables in the first differenced equations, using levels of the series lagged two

[10] The exclusion of small outliers is done because these countries are too small to impact the path of global imbalances, which is the focus of our interest. Yet, the pathological patterns of these outliers, some driven by wars, are strong enough to impact the significance of some of the coefficients in our regressions.

periods or more. This GMM method has important advantages over simple cross section regressions and other estimation methods for dynamic panel data models. Since, under the assumption that the time varying disturbances in the original level equations are not serially correlated, the difference GMM estimator not only solves the bias caused by omitted variables that are constant over time, but also allows parameters to be estimated consistently in the presence of endogenous right-hand-side variables. The fourth column in table 3 and 4 reports our results using this method.

Blundell and Bond (1998) have developed another similar GMM estimator which is more efficient when untransformed lags are weak instruments for transformed variables. In this so called system GMM estimation process, it not only includes the standard set of equations in first-differences with suitably lagged levels as instruments, but also includes an additional set of equations in levels with suitably lagged first-differences as instruments. Column 7 and 8 report our results using this method for a different time span. All these GMM estimations have confirmed that there is a strong positive association between economic growth and current account/GDP.

The positive association between economic growth and the current account does not fit well with the conventional open economy neo-classical models. A possible interpretation for this finding focused on the implications of habit formation on saving rates in emerging markets.[11] The experience of developing countries suggests that increasing saving rates dose not occur overnight, and it may be a time consuming process. In an important study Carroll and Weil (1994) illustrated that the saving rates of East Asian countries (like Korea, Japan, Singapore and Hong Kong) were much lower several decades ago, and their thriftiness is a more recent phenomenon. They pointed out that the "statistical" causality may run from a higher growth rate to a higher saving rate; and conjectured that the growth saving causality may be explained by a model where utility depends both on present and past consumption, i.e. on habit formation [see also Carroll et. al. (2000) and Aizenman et. al. (2007)]. Prasad et al. (2008) pointed out that the positive association between economic growth and the current account may also stem from the emerging markets' limited capacity to provide efficient financial intimidation. They provide evidence that even successful developing countries have a limited absorptive capacity for

[11] The habit formation hypothesis states that people get utility from a comparison of their current level of consumption with the level that they are "accustomed to," the latter corresponds to the habitual level of consumption, as defined by consumption history. Habits make consumers reluctant to change consumption drastically following fundamental shocks, slowing the adjustment of consumption. Habit formation implies that the consumer is more willing to postpone consumption in response to an increase in productivity, and thus makes the saving response to a surge in productivity stronger.

foreign resources or for their domestic saving, either because their financial markets are underdeveloped, or because their economies are prone to overvaluation caused by rapid capital inflows.[12]

The tables also suggest the possibility of a two-way feedback between growth and the current account. As we are not dealing with the direction of causality, we focus on the positive implications of these results regarding the sustainability of Chinese high growth while maintaining a high current account surplus. These findings reinforce the challenge posed by the growing current account surplus run by high growing countries, as they would require overtime higher current account/GDP deficits run by slower growing countries, deficits that tend to be unattainable for most. Thus, short of the emergence of "new demander of last resort" replacing the US, the Chinese growth path would be challenged by the limited appetite for prolonged current account deficits of most countries.

3. Concluding remarks

The results reported in the paper are consistent with the notion that, with the exception of the US, larger countries run shorter spells of current account deficits. It suggests that even after the collapse of the Bretton Woods system, the U.S. enjoyed global economic hegemony, enabling it to run large and long spells of current account deficits. Yet, as was frequently suggested by critics of the US policy in recent years, the gains from economic hegemony would be eroded if the leading country overplays its privileged position. Arguably, this explained the collapse of the Bretton Woods system, and may explain the potential unwinding of the patterns of global imbalances observed prior to the start of the recent global liquidity crisis.

[12] See Caballero et al. (2008) for a model of global imbalances as an equilibrium outcome when different regions of the world differ in their capacity to generate financial assets from real investments.

References

Aizenman, J., B. Pinto and A Radziwill (2007). "Sources for financing domestic capital – is foreign saving a viable option for developing countries?" *Journal of International Money and Finance*, September, pp. 682-702.

Aizenman, J. and J. Lee (2007). "International Reserves: Precautionary versus Mercantilist Views, Theory, and Evidence," *Open Economy Review*, Vol. 11, pp.191-214.

Blanchard O. (2007). "Current Account Deficits in Rich Countries" NBER Working paper # 12925.

Blundell, R., and S. Bond. 1998. Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics 87: 11–143.

Caballero, R., E, Farhi and P.O. Gourinchas (2008). "An Equilibrium Model of 'Global Imbalances' and Low Interest Rates", *American Economic Review*, Vol. 99, pp: 584-588.

Caroll C., Weil D. N., 1994. Saving and growth: a reinterpretation, *Carnegie Rochester Conference Series*, 40, 133-192.

Caroll C., Overland J., Weil D. N., 2000. Saving and Growth with Habit formation. *American Economic Review*. 90 (3), 341-355.

Chinn, M. D. and H. Ito (2005). "Current Account Balances, Financial Development and Institutions: Assaying the World 'Savings Glut'". NBER Working Paper # 11761.

Cooper, R. (2005). "Living with Global Imbalances: A Contrarian View", *Policy Briefs in International Economics*, IIE. November.

Dooley, M., D. Folkerts-Landau and P. Garber (2004a). "The revived Bretton Woods system," *International Journal of Finance & Economics*, vol. 9(4), pp: 307-313.

_____ (2004b). "The cosmic risk: an essay on global imbalances and treasuries," DB report.

Edwards, S. (2004). "Thirty years of current account imbalances, current account reversals, and sudden stops." *IMF Staff Papers* Vol. 51, Special Issue, pp. 1-49.

Edwards S. (2005). "Is the U.S. current account deficit sustainable? And if not, how costly is adjustment likely to be?" *Brookings Papers on Economic Activity*, Vol. 2005(1), pp: 211–288.

Edwards S. (2005). "On Current Account Surpluses and the Correction of Global Imbalances," NBER Working paper 12904.

Eichengreen, B. and Y. Park (2006), "Global Imbalances: Implications for Emerging Asia and Latin America". Presented at *Global Imbalances and Risk Management Has the center become the periphery?*, Madrid, May.

Faruqee H. and J. Lee. (2006), "Global Dispersion of Current Accounts: Is the Universe Expanding?" manuscript, the IMF.

Feenstra C. R. and C. Hong (2007), "China's Exports and Employment," NBER Working paper 13552.

Gourinchas, P.O. and O. Jeanne. (2006). “Capital Flows to Developing Countries: The Allocation Puzzle,” mimeo, UC Berkeley, Department of Economics.

Jeanne, O. and R., Rancière (2006). “he Optimal Level of International Reserves for Emerging Market Countries: Formulas and Applications,” IMF Working Paper 06/229 (Washington: International Monetary Fund).

Jeanne, O. (2007). “International Reserves in Emerging Market Countries: Too Much of a Good Thing?” *Brookings Papers on Economic Activity*, 1.

Ju J. and S.J. Wei (2007).“Domestic Institutions and the Bypass Effect of Financial Globalization,” NBER Working paper 13148.

Lane, P. and G. M. Milesi-Ferretti (2006). “The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities,1970–2004". The Institute of International Integration Studies Discussion Paper Series.

Obstfeld, M. and K. Rogoff (2005). “Global exchange rate adjustments and global current account imbalances”. *Brookings Papers on Economic Activity*, Vol. 2005(1), pp: 67–146.

Prasad, E., Rajan, R. and A. Subramanian. (2007). “Foreign Capital and Economic Growth,” *Brookings Papers on Economic Activity,* 1.

Roubini, N. (2006). “Mind the gap”, *Global Economy and International Finance*. See http://www.rgemonitor.com/blog/roubini/.

Setser, B. (2006). “Bretton Woods 2: Is it Sustainable?” Paper presented at “Global Imbalances and Risk Management Has the center become the periphery?”, Madrid, May.

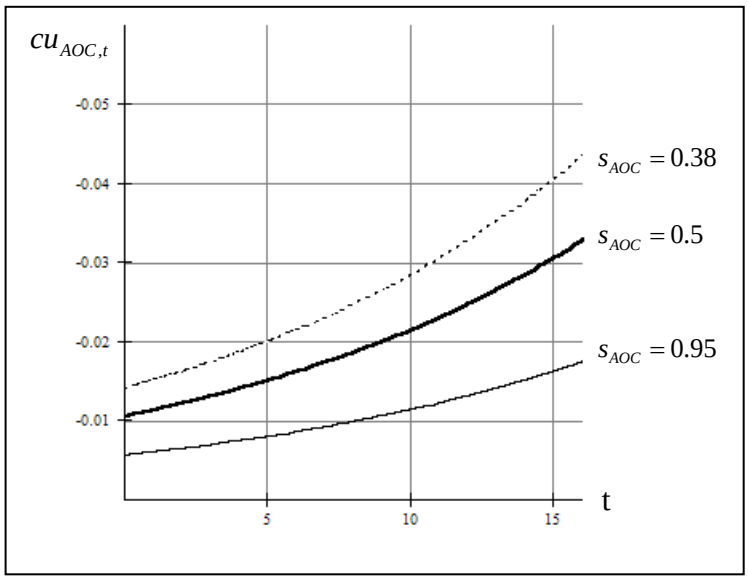


Figure 1

Projected current account/GDP of AOCs.

Plotted for the case where $cu_C = 0.1; d\log GDP_{c,t}/dt = 0.1; d\log GDP_{AOC,t}/dt = 0.03$. The three curves correspond to different assumptions about the relative size of the block of AOC that run current account deficits, s_{AOC} = 0.95, 0.5 and 0.38 from the bottom to the top curve.

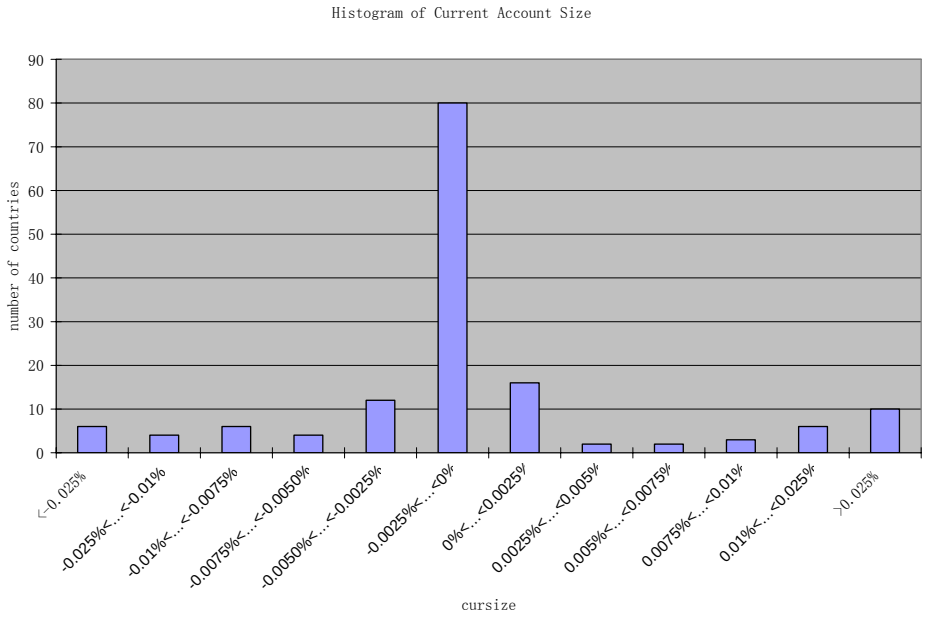


Figure 2

Cross country patterns of average current account/ World GDP, 1990-2005

The sample: 151 countries that have at least 9 years data on their cursize during 1990-2005.

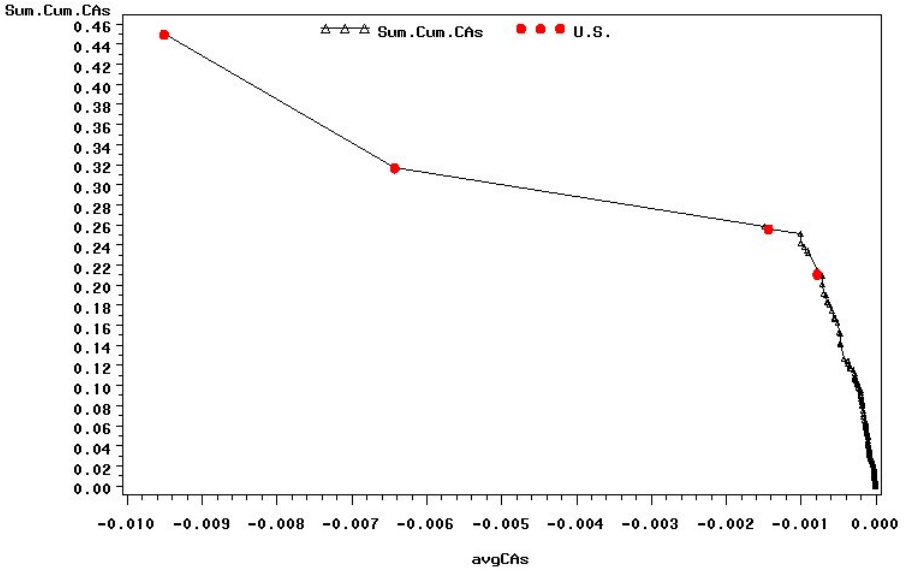
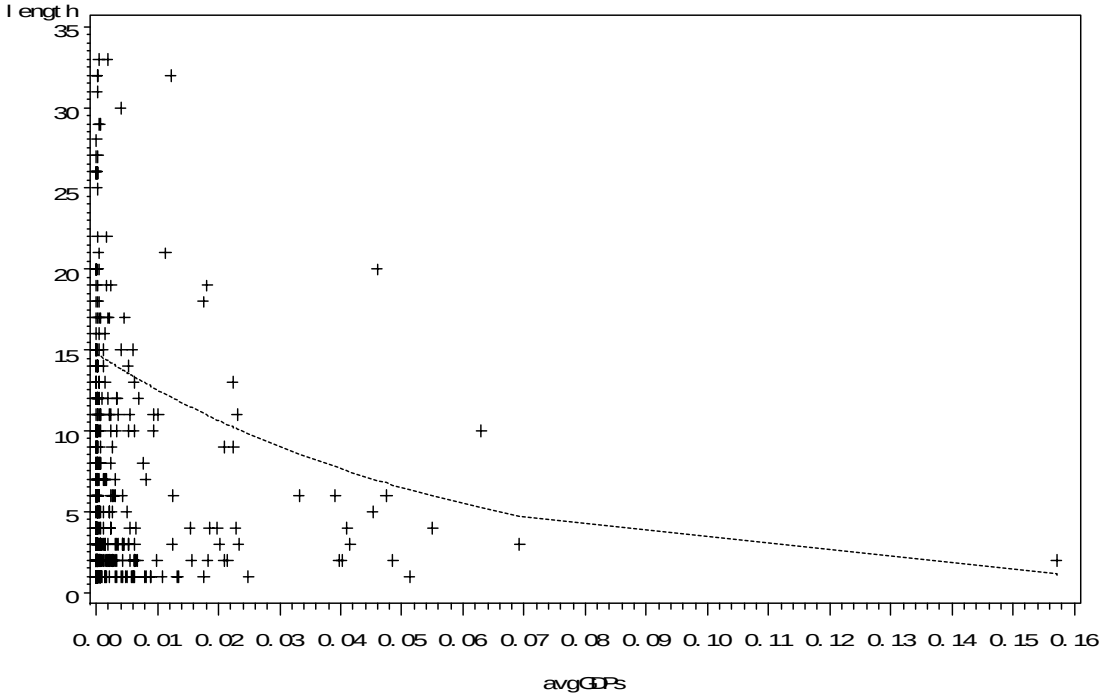


Figure 3

The association between avg annual CA deficit/annual WGDP (avgCAs) and sum of the cumulative AvgCAs (where Cum.CAs=avgCAs*length). The graphs are based on data of all deficit episodes from our sample, 1966-2005, subject to data availability (429 episodes). U.S. Current account deficit spells are represented by the round bold dots, other countries current account deficit spells are represented by triangles.



Panel 4 [length of deficit spells and country relative size, without the US]

Figure 4 – The association between relative GDP size and the duration of current account deficit spells, without the US. The dash line in the graph gives the predicted value using life survival regression results.
Source: equations 1 and 2, Table 2, all current account deficit episodes during 1966-2005 in WDI data.

Table 1 **Global Patterns of the average Current account/GDP, GDP growth and relative GDP ratios, 1990-2005 [145 countries, covering 96% of the global GDP]**

Country group based on Current Account as %GDP		# of countries in sample	GDP size (% 90-05 WGDP)	average weighted GDP Growth Rate	GDP size (% 2006 WGDP)	GDP size (2006 US$ billion)
Deficit countries	<-5%	48	1.112%	2.029%	1.120%	72,040
	<-3%	76	5.676%	2.872%	5.802%	332,208
	<-2.5%	82	37.999%	2.971%	38.386%	1,810,711
	<-2%	89	38.716%	2.981%	39.193%	1,853,311
	<-1.5%	96	44.527%	2.951%	44.993%	2,164,954
	<-1%	100	47.546%	2.933%	47.583%	2,304,045
	<-0.5%	107	50.344%	3.038%	50.872%	2,440,189
	<0%	111	53.116%	3.026%	53.693%	2,597,295
Surplus countries	>0%	34	43.042%	2.439%	40.919%	1,970,334
All countries		145	96.158%	2.763%	94.612%	4,567,629

Data source: WDI, include countries that have data more than 10 years.

Table 2 **Regression analysis of current account durability and size**

dependent variable : Length of current account deficit spell

Parameter	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	2.64***	2.69***	2.35***	2.42***	2.79***	2.80***
	(0.08)	(0.08)	(0.13)	(0.14)	(0.10)	(0.10)
avgGDPs	**-3.01***	**-16.45*****	**-2.01**	**-13.27*****	**0.08**	**-10.55***
	(1.74)	**(4.31)**	**(1.78)**	**(4.63)**	**(2.13)**	**(5.49)**
ini.EWN			-0.52***	-0.44**		
			(0.20)	(0.20)		
avgGDPg			2.11	2.12		
			(2.97)	(3.01)		
avgGDPpc					-0.33***	0.27**
					(0.12)	(0.12)
With US data	yes	no	yes	no	yes	no
No.of Censored	202	201	140	139	200	199
No.of obs	429	425	329	325	425	421
log likelihood	-547	-538	-433	-425	-540	-532

* Notes: numbers in parenthesis are standard errors. *, ** and *** stand for 10%, 5% and 1% significant level respectively. The table reports the results of life survival regressions.

Definitions

Avg.GDPs measure the average ratio of country's GDP to world GDP (WGDP) during the full episode.

$$avgGDPs = average_{startyear-endyear}\left(\frac{GDP\,i,t}{WGDP\,t}\right)$$

Avg.GDPg measure the average growth rate of country's real GDP (constant 2000 US$) during the episode. Where GDP growth rate is measured by $\ln(GDP_{i+1})$-$\ln(GDP_i)$

Ini.EWN gives the EWN position (to its GDP) in the starting year of the episode.

AvgGDPpc measure the average level of per capita GDP (unit in 10,000 US$, 2000 constant price).

Table 3 **The association between current account and economic growth**

CA ratio	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−0.054***	−0.049***	−0.057**		−0.051***	−0.045***
	(0.002)	(0.007)	(0.024)		(0.003)	(0.003)
GDP growth	0.109***	0.089**	0.049*	0.046**	0.061***	0.047***
	(0.038)	(0.038)	(0.027)	(0.022)	(0.021)	(0.016)
GDP per capita	0.030***	0.030***	0.031***	−0.012	0.030***	0.030***
	(0.002)	(0.002)	(0.001)	(0.009)	(0.001)	(0.001)
Data from	1990	1990	1970	1990	1990	1970
Include time dummies	no	yes	yes	yes	yes	yes
Method	OLS	OLS	OLS	Difference GMM	System GMM	System GMM
# of obs	2286	2286	4064	2239	2286	4064
R square	0.0951	0.1046	0.1021			

Note: 1. Numbers in parenthesis are standard error. *, ** and *** stand for 10%, 5% and 1% significant level respectively.
2. GDP per capita is measured by 10,000 US dollar (base year=2000)
3. All regressions exclude 5 outliers associated with small countries, whose current account/GDP was below – 70%, or GDP growth rate was below – 50% (Kuwait 1991, Equatorial Guinea 1995, 1996; Rwanda 1994, and Kiribati 1980)

Table 4 **The association between economic growth and current account**

GDP growth	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.036***	0.031***	0.062***		0.031***	0.046***
	(0.001)	(0.004)	(0.014)		(0.002)	(0.003)
CA ratio	0.033***	0.026**	0.017*	0.025**	0.023**	0.017*
	(0.012)	(0.011)	(0.009)	(0.015)	(0.012)	(0.009)
GDP per capita	−0.003**	−0.003***	−0.003***	−0.008	−0.001	−0.001
	(0.001)	(0.001)	(0.001)	(0.008)	(0.001)	(0.001)
Data from	1990	1990	1970	1990	1990	1970
Include time dummies	no	yes	yes	yes	yes	yes
method	OLS	OLS	OLS	Difference GMM	System GMM	System GMM
# of obs	2286	2286	4064	2239	2286	4060
R square	0.0048	0.0451	0.0497			

Note: same as table 3.

Data Appendix

		All episode	CA deficit episode	CA surplus episode	Countries with avg Cur.size <- 0.005%	High income countries***	Low income countries***
# of countries in sample		175	168	148	22	38	40
# of episode		824	443	381	134	185	160
# of episode be censored		324	211	113	43	42	55
earliest start year		1966	1966	1967	1966	1966	1974
length of episode	mean	5.154	6.941	3.076	5.341	4.978	4.725
	max	33	33	25	33	33	28
GDP ratio to WGDP	mean	0.008	0.007	0.009	0.030	0.024	0.001
	max	0.305	0.303	0.305	0.305	0.303	0.015
	min	0.000	0.000	0.000	0.001	0.000	0.000
avg GDP growth	mean	0.032	0.032	0.031	0.028	0.033	0.027
	max	0.302	0.146	0.302	0.089	0.136	0.302
	min	-0.355	-0.126	-0.355	-0.121	-0.036	-0.184
CA ratio to GDP_i *	mean	-0.014	-0.062	0.043	-0.008	-0.009	-0.021
	max	0.434	0.000	0.434	0.062	0.384	0.285
	min	-0.695	-0.695	0.000	-0.071	-0.240	-0.311
CA ratio to WGDP	mean	0.0000	-0.0001	0.0001	-0.0002	0.0001	0.0000
	max	0.0040	0.0000	0.0040	0.0015	0.0040	0.0002
	min	-0.0095	-0.0095	0.0000	-0.0095	-0.0095	-0.0002
Ini EWN position **	mean	-0.286	-0.277	-0.241	-0.264	0.040	-0.598
(net asset/GDP)	max	5.497	5.497	2.829	0.250	5.497	0.102
	min	-2.922	-2.922	-2.153	-0.875	-1.095	-2.097
avg EWN position **	mean	-0.310	-0.371	-0.296	-0.284	0.023	-0.646
(net asset/GDP)	max	3.970	3.970	2.007	0.143	3.970	0.102
	min	-3.134	-3.134	-2.153	-0.804	-1.074	-2.339
avg Per capita GDP	mean	0.5215	0.47313	0.5774	0.9244	1.5464	0.0374
(10,000 US$)	max	4.4482	3.3497	4.4482	3.2731	3.3871	0.0932
	min	0.0101	0.0101	0.0109	0.0215	0.2934	0.0101

Note: * exclude Kwuit 1991 episode which have value -121.381%

** EWN is the ratio of net external assets relative to GDP

*** Definition of high and low income countries are the same as those in WDI.

Data sources: current account and GDP data are from WDI, EWN data are from Lane and Milesi-Ferretti's online data on external wealth of nations (http://www.tcd.ie/iiis/pages/people/planedata.php)