Kai Gao and Keyu Jin

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Article (Accepted version) (Refereed)

Original citation:

Gao, Kai and Jin, Keyu (2009) Composition and growth effects of the current account: a synthesized portfolio view. Journal of international economics, 79 (1). pp. 31-41. ISSN 0022-1996

DOI: 10.1016/j.jinteco.2009.03.003

Composition and Growth Effects of the Current Account: A Synthesized Portfolio View*

Kai Guo[†]
Department of Economics
Harvard University

Keyu Jin[‡]
Department of Economics
Harvard University

First Draft: July 27 2005
This Draft: February 17 2009

Abstract

This paper analyzes a useful accounting framework that breaks down the current account to two components: a composition effect and a growth effect. We show that past empirical evidence, which strongly supports the growth-effect as the main driver of current account dynamics, is misconceived. The remarkable empirical success of the growth effect is driven by the dominance of the cross-sectional variation, which, under conditions met by the data, is generated by an accounting approximation. In contrast to previous findings that the portfolio share of net foreign assets to total assets is constant in a country, both our theoretical and empirical results support a highly persistent process or a unit root process, with some countries displaying a trend. Finally, we reestablish the composition effect as the quantitatively dominant driving force of current account dynamics in the past data.

JEL Classification: **F21, F32, F41**

Key Words: **Current Account, Portfolio View, Valuation Effects, Composition Effects, Growth Effects**

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*We thank Kenneth Rogoff for his guidance and encouragement over the entire process of this research. We are grateful to Robert Barro, Richard Cooper, Graham Elliott, Li Han, Elhanan Helpman, Rustam Ibragimov, Dale Jorgenson, Konstantin Styrin, Aleh Tsyvinski, Eric van Wincoop, and Harvard International Economics Workshop, Marcoeconomics, and Econometrics Workshop participants for helpful comments. We thank Florent Ségonne for certain technical support. Any remaining errors are the responsibility of the authors.

[†]Tel: 202-280-3676. Email: kaiguo@post.harvard.edu

[‡]Tel: 617-817-8903. Email: kjin@fas.harvard.edu

1 Introduction

The U.S.'s widening current account deficit over the past decade and the growing current account imbalances have become a subject of vast interest.[1] Alongside these recent experiences of global imbalances is an explosion of international financial asset trade among an expanding group of economies.[2] With the increasing leverage in national portfolios and the potentially huge wealth transfers associated with alterations of the portfolio allocation, concepts of external adjustment and external imbalances are no longer adequate without reference to the structure of national portfolios, according to Obstfeld (2004), among many others. The recent surge in the literature on portfolio models of the current account reflects these new trends in global finance.

One of the first that marked the recent emergence in portfolio models is the partial-equilibrium approach of Kraay and Ventura (2000, 2003). According to their theory, international capital flows, or the current account, is caused by portfolio growth through changes in wealth. Countries invest the marginal unit of wealth as the average unit, or in other words, portfolio shares (net foreign assets to total assets) are constant, and the current account is simply equal to the changes in wealth times the portfolio share.

Most recently, the works of Devereux and Sutherland (2006 a,b,c) and Tille and Van Wincoop (2008) explicitly model portfolio choice for both gross and net international capital flows, taking into account the general equilibrium effects of portfolio choice on external adjustment. While their emphasis is methodological,[3] they make the important point that international capital flows in their framework can be broken down into a component associated with portfolio growth through savings and a component associated with the optimal reallocation of portfolio as a result of changes in expected risk and returns of various assets. Their models also incorporate valuation effects, which have been at the heart of empirical research on external adjustments, notably Lane and Milesi-Ferretti (2005), Gourinchas and Rey (2007), and Tille (2005).

In this paper, the first objective is to show that most of the recent literature on the current account

[1] The share of U.S. current account deficits in GDP reached an unprecedented high of 6.4% in the year of 2005 and remains at a high level.

[2] For industrial countries, the sum of the stock of foreign assets and foreign liabilities relative to GDP has increased by a factor of 7, from 45% to 300% over the period of 1970-2004. For developing countries, it has increased from around 40% to 150% over the same period (Lane et al 2007).

[3] They develop a method for solving dynamic stochastic general equilibrium open-economy models with portfolio choice that can be implemented both in a complete market setting and an incomplete market setting.

can be nested into a non-structural, accounting framework. The accounting framework decomposes the current account into two factors that are synonymous to the *portfolio growth* and *portfolio reallocation* breakdown emphasized in the general equilibrium model of Tille and Van Wincoop (2008). We call these two effects a *composition effect* and a *growth effect*. The composition effect is like a "substitution effect", and refers to the reallocation of the portfolio towards or away from foreign assets. It is manifested in changes to the portfolio share (share of net foreign assets in total assets). The growth effect is similar to an "income effect", and refers to changes in the budget set, or total wealth, that leads to corresponding proportional changes in both assets and liabilities. The framework can also incorporate valuation effects and capital gains and losses and their impact on the current account. This non-structural, synthesized framework, despite its simplicity, can be very useful as a framework in nesting, and empirically assessing, various theories of the current account without needing to impose more structure on the model.

This framework, along with the general equilibrium models, demonstrate the theoretical importance of *both* the composition effect and the growth effect in accounting for external adjustments. Yet, the Kraay and Ventura (2000) theory puts forth "the growth effect" as the source of long-run current account movements. Other theories of the current account, albeit not based on portfolio choice models, such as Blanchard, Giavazzi and Sa (2005), Caballero, Farhi, and Gourinchas (2008), essentially posit that the "composition effect" is the main driver of current account movements. These three different views of the current account naturally call for an empirical investigation on which factor, if not both, is more quantitatively relevant. While there is still a dearth in the empirical assessment of these portfolio choice models, the closest related empirical work is that of Kraay and Ventura (2000, 2003). Based on their view that portfolio shares are fixed in the long run and current account changes are brought about by changes in wealth, they run a "fixed-portfolio" regression to test the theory, and find overwhelming support for the growth-effect theory.[4] Consequentially, it appears that the growth effect is sufficient for describing the real-world dynamics of external adjustment, leaving the composition effect highlighted by general equilibrium models only as a theoretical plausibility.

The need for more concrete empirical assessment of these theories leads to the paper's second objective, which is to use historical OECD data to empirically assess the relative importance of the

[4]Kraay and Ventura (2003) shows empirically that the rule that portfolio shares are constant does not hold well in the short run, but is rather a good description of the data in the long run.

composition effect and the growth effect. Two results emerge: first, we overturn the Kraay-Ventura conclusion that changes to the current account is explained by the growth effect, by theoretically showing that the surprising result of their "fixed-portfolio" cross-country regression is the outcome of a "coincidence", whereby an omitted variable bias is concealed by the case of a short time series. Furthermore, because the initial values of net foreign assets are small relative to the subsequent flows in the data sample, the cross-sectional variation is generated only by an accounting approximation and therefore contains limited informational content. Second, we find that the portfolio share is consistent with following a highly persistent process, with some countries displaying a deterministic trend, directly in opposition to the earlier claims that the portfolio share is constant.

These findings suggest that the existing empirical work can be very misleading in ascribing the growth effect as the main explanation for international capital flows. By overturning the Kraay-Ventura result, together with a variance decomposition of the current account, we are able to establish the composition effect as the main driver of external adjustment dynamics, and that the growth effect, while theoretically plausible, is quantitatively insignificant.

The paper is organized as follows. In Section 2 we derive an accounting framework that exposits different possible channels through which current account adjustments can occur, and nest the recent current account literature into this framework. Section 3 gives a theoretical exposition of the problem of the fixed-portfolio cross-country regression results, and Section 4 undertakes the empirical analyses. Section 5 provides a discussion on certain theoretical implications of the synthesized framework and Section 6 concludes.

2 The Framework

2.1 Theoretical Derivation

In this section, we derive an accounting framework of the current account that can nest the myriad of different views on external imbalances recently put forth in the literature. This framework, although non-structural, can empirically evaluate structural models of the current account such as Kraay and Ventura (2000, 2003), Blanchard et al (2005), and Caballero et al (2008), and nonstructural models such as Gourinchas and Rey (2007), at the same time giving certain theoretical predictions related to the current account.

In deriving the framework, we first begin with an accounting identity. Define wealth, $W = K + NFA$, where W is total wealth, K is the domestic capital stock and NFA is the net foreign asset position. Define x as the share of net foreign assets in total wealth. Therefore,

$$NFA = x \cdot W \tag{1}$$

Taking a total differentiation of this equation yields the following:

$$\Delta NFA = \Delta x \cdot W + x \cdot \Delta W \tag{2}$$

Here, ΔNFA is the change in net foreign assets, Δx is the change in the portfolio share of net foreign assets, and ΔW is the change in the total wealth, which we call savings (explained below). By definition, the change in net foreign assets ΔNFA is just the current account CA. This gives us the following equation:

$$CA = \Delta x \cdot W + x \cdot S \tag{3}$$

Equation 3 leads to an accounting framework that attributes the current account balance to the sum of two effects: the effect of a change in the portfolio share, x, what we call the "composition effect", and the effect of a change in wealth, which is in our terminology the "growth effect".[5]

On one side of the current account literature, Blanchard et al (2005), Caballero et al (2008) and part of Cooper (2005) argue that current account changes reflect changes in x, the composition effect.[6] According to equation 3, this means that $CA = \Delta x \cdot W$. On another side, Kraay and Ventura (2000, 2003), among others, argue that the U.S. current account deficit is due to a growth effect.[7] Countries

[5]These two effects are tantamount to the "portfolio growth" effect and "portfolio reallocation" effect in the general equilibrium model of Tille and Van Wincoop (2008).

[6]Blanchard et al (2005) attribute the large U.S. current account deficit to exogenous shocks to asset preferences, in particular, a permanent increase in demand for U.S. assets. Caballero et al (2008) explain the rise in the share of U.S. assets in the global portfolio and the subsequent large current account deficits by the slow growth condition in Europe relative to the U.S. and the inability of Asian financial markets to generate sufficient financial assets to cope with their good growth conditions. Cooper (2005) argues that the marginal foreign investment in the U.S. exceeds its average foreign investment, and that the U.S. has investment opportunities that produce higher returns than in Japan and Europe. In essence, all of these papers argue that changes in portfolio composition is the main source of large current account movements, albeit for different underlying reasons.

[7]Bussiere, Chortareas, and Driver (2002) empirically find that in a panel of 18 OECD countries, initial portfolio allocation affects current account behavior following temporary shocks, therefore concluding that these results are compatible with the "new rule" suggested by Kraay and Ventura (2000). Iurrita (2004) extends the Kraay-Ventura (2000) model to a two-country large open-economy model, and examine the current account responses to transitory-income shocks in a two-country world.

maintain a constant portfolio composition as the portfolio enlarges, as it is customary that countries "invest the marginal unit of wealth in the same way as the average unit".[8] Based on the Kraay-Ventura claim, a simple rule predicts the current account response to changes in wealth: it is equal to this constant share of net foreign assets multiplied by the additional wealth.[9] In our framework: countries maintaining constant portfolio shares over time amounts to $\Delta x = 0$. Namely, only the growth effect remains: $CA = x \cdot S$.

The third view of the literature is represented by the general equilibrium portfolio models developed most recently, such as Tille and Van Wincoop (2008), and Devereux and Sutherland (2006a,b,c). They point to the theoretical importance of taking into account both the composition effect and the growth effect in explaining current account adjustments. The following sections take up the task of empirically assessing these three different portfolio views of the current account.

2.2 Empirical Results in the Literature

Although many theories of the current account from a portfolio perspective have emerged from this recent wave of interest, there has been very little lucid empirical analysis on these theories. No existing empirical work, to our knowledge, has specifically aimed at exploring the relative importance of the two effects in explaining the current account. The most relevant empirical study to this end is the work done by Kraay and Ventura (2000), which tests the validity of the growth-effect theory. To test the theory that $CA = x \cdot S$, the regression[10]

$$CA_{it} = \beta_0 + \beta_1 (x_{it} \cdot S_{it}) + \eta_{it} \tag{4}$$

[8] The other dimension of Cooper (2005)'s argument also encompasses the "growth effect" feature in stressing that the large U.S. current account deficit is only a natural feature of the increasingly globalized world, where a portion of the world's excess saving is invested in the U.S.

[9] This seemingly simple equation yields surprising implications that are absent in the standard view of the current account. An increase in savings will lead to a current account deficit in debtor countries but a current account surplus in creditor countries. For this reason, Kraay and Ventura's explanation of the huge current account deficit in the U.S. is not a reflection of shifts towards U.S. assets and away from foreign assets by foreign countries, but of the large increase in its wealth and of the fact that U.S. had been a debtor.

[10] Kraay and Ventura (2000) confirms that the results of this regression holds even after controlling for a number of relevant variables and using an instrumental variable to estimate the β_1 coefficient. Omitted variable bias and measurement error seem not to affect much of the result, and therefore we follow Kraay and Ventura in using this reduced-form equation as the basis of our analysis.

is performed. CA_{it} and S_{it} denote the current account and savings as a share of GNP in country i in year t; x_{it} is the share of net foreign assets in total assets; and η_{it} is the error term.[11]

According to the growth-effect theory, β_1 should be 1. Kraay and Ventura (2000) run both the pooled regression that includes all country/year observations of 13 OECD countries over the time frame of 1973-1995 and the cross-section regression that uses country-averages of all variables, i.e. $\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it} \cdot S_{it}} + \eta_i$(upper bar of a variable denotes its average over time). They find that the estimated β_1 is 0.955 in the pooled regression and 0.996 in the cross-section regression, and cannot reject the null that β_1 is equal to 1 in either case. We re-run the cross-section regression using three different measures of the current account, including measures that account for valuation effects, and find similar results, reported in Table 1.[12] $\beta_1 = 1$ cannot be rejected when using any of the three measures, despite the datasets' dissimilarity. Figure 1 displays the empirical result of the cross-section regression.

[INSERT TABLE 1 HERE]

[INSERT FIGURE 1 HERE]

We make two important observations here. First, according to our accounting framework, $\beta_1 = 1$ does not necessarily rule out the importance of the composition effect, nor by itself provide support for the growth effect. If the composition effect is uncorrelated with the growth effect, which is not implausible, we could well have $\beta_1 = 1$, while a significant portion of current account movements can still be accounted for by the composition effect. However, the fact that the R^2 in the cross-section regression above can be as high as 0.85 seems to suggest that the majority of the cross-sectional variations of the current account is attributed to the growth effect. The composition effect, on the other hand, is at best marginally important.

The second observation is that the empirical support for the growth effect comes from primarily the cross-sectional variations and not in the least bit from the time-series variations. Table 2 compares the

[11] Note that in running this regression, Kraay and Ventura's measure of the current account CA does not consistently take into account valuation effects and capital gains. Later, we re-run the regression with our measure of current account CA, which include these effects.

[12] First, we expand the original K-V dataset, using conventional measures of the current account, to 20 OECD countries over 1973-2003. Because of data availability issues and especially of the missing IIP data in the IMF's Balance of Payment Statistics for some countries in early years, it is an unbalanced panel. We subsequently use the change in net foreign assets and IIP taken from the Lane et al (2007), "Mark II" dataset for 22 OECD countries over 1973-2003 to run the same regression, also reporting the results using the Lane et al (2001), "Mark I" dataset covering a shorter time period of 1973-1998 for the same set of countries, where estimates of net foreign assets is based on a different methodology from the subsequent one and are therefore somewhat different.

outcome of the within regression (time-series variation within each country) and between regression (cross-sectional variation). Clearly, there is no evidence supporting the "new rule" at the time-series dimension while it performs remarkably well at the cross-sectional dimension. In Kraay and Ventura (2003), they interpret this divergence in performance as the distinction between a short-run and a long-run phenomenon. They argue that the "new rule" may not hold well in the short-run possibly as a result of adjustment costs, but that it nevertheless holds very well in the long-run, as is evident from the cross-section regression results. For this reason, the next sections focuses exclusively on the cross-sectional regressions (in which the evidence lies), and show that the cross-sectional variations in the current account are mainly driven by an accounting approximation, so that the only piece of evidence that remains provides little meaningful empirical support for the "new rule".

[INSERT TABLE 2 HERE]

An important and equally surprising result is: when instead of running the shares regression above, $\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it} \cdot S_{it}} + \eta_i$, where the current account is the share of GNP, and savings is taken to be the savings rate, we run a levels regression, where CA_{it} is taken to be the *levels* of the current account and S_{it} is taken to be total savings, the coefficient is β_1 now actually close to 2 (Table 3). According to the growth-effect theory, these two different specifications should be identical in terms of predicting $\beta_1 = 1$, with the levels regression being an even more direct way of assessing the growth-effect theory than $CA = x \cdot S$. The theoretical analysis in the next section will illustrate exactly why one *could* obtain the result that $\beta_1 = 2$, and how it sheds light on the Kraay-Ventura result.

[INSERT TABLE 3 HERE]

3 The Problem of the K-V Cross-Section Regression

3.1 The Shares Regression

We theoretically derive the explicit expression for the β_1 coefficient of the cross-section specification for three different data generating processes of x, for both the shares and the levels regression. We will show that we can in fact obtain $\beta_1 = 1$ for all of the considered DGP's of x in the shares regression, but that the possibility of seeing $\beta_1 = 2$ in the levels regression is only consistent with x following a highly persistent or unit root process with some countries displaying a trend.

By definition, the portfolio share x of country i at time T is equal to the initial net foreign asset position, NFA_{i0}, plus the sum of subsequent ΔNFA in every period current account in each period), divided by the initial total asset position, W_{i0}, plus the sum of savings in every subsequent period. The following accounting identity follows:

$$x_{iT} = \frac{NFA_{i0} + CA_{i1} + CA_{i2} + ... + CA_{iT}}{W_{i0} + S_{i1} + S_{i2} + ... + S_{iT}} \tag{5}$$

If the initial net foreign asset position NFA_{i0} and assets W_{i0} are quantitatively small compared to the incremental net foreign assets and wealth over subsequent periods, these initial values can be ignored. As such, the following equation will be approximately true:

$$x_{iT} = \frac{NFA_{i0} + CA_{i1} + CA_{i2} + ... + CA_{iT}}{W_{i0} + S_{i1} + S_{i2} + ... + S_{iT}} \approx \frac{\sum_{t=1}^{T} CA_{it}}{\sum_{t=1}^{T} S_{it}} = \frac{\sum_{t=1}^{T} CA_{it}/T}{\sum_{t=1}^{T} S_{it}/T} = \frac{\overline{CA_{it}}}{\overline{S_{it}}} \tag{6}$$

The end-of-period portfolio share x_{iT} is approximately equal to the sum of all current account balances in each period divided by the sum of savings in each period. Consequently, x_{iT} is simply equal to the average current account over the average savings (upper bar of a variable denotes its average over time). Note that this approximation does not require a very long time series, i.e. a large T. The reason is that financial globalization and economic growth over the past three decades has served to reduce the quantitative importance of initial net foreign asset positions and wealth compared to the subsequent flow variables. From our sample, which consists of the period between 1973 and 2003, the initial assets represent on average 10% of the sum in the denominator, and the initial net foreign asset position represents about 5% of the total sum in the numerator. Rearranging equation 6, we get

$$\overline{CA_{it}} = x_{iT} \cdot \overline{S_{it}} \tag{7}$$

which says that the average current account of country i over the sample period is simply equal to the end-of-period share of net foreign assets times the average savings over the same period.

It should be noted that equation 7 is very similar to the cross-section regression $\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it} \cdot S_{it}} + \eta_i$ in Kraay and Ventura (2000, 2003), albeit not identical. In the rest of this section, we will show that the accounting approximation equation 7, which holds regardless of the underlying process of x_{it} and S_{it}, may undermine the validity of the cross-section regression in Kraay and Ventura

(2000, 2003). In particular, we show that given the short time horizon of the period in consideration, this accounting approximation may dominate the cross-section variations of the current account for a wide range of processes of x_{it}, regardless of whether it's consistent or inconsistent with the "new rule".

A caveat is, should we care about the process of S_{it}, or alternatively the process of W_{it}? In principle, yes. To see this, the regression $\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it} \cdot S_{it}} + \eta_i$ can be rewritten as

$$\overline{CA_{it}} = \beta_0 + \beta_1 \left[\overline{x_{it}} \cdot \overline{S_{it}} + cov_t(x_{it}, S_{it}) \right] + \eta_i,$$

where $cov_t(x_{it}, S_{it})$ is the time-series correlation between x_{it} and S_{it} in country i, which shows that the process of S_{it} and in particular its time-series correlation with x_{it} matters. A look at the data, however suggests that this term is quantitatively negligible: the correlations between $\overline{x_{it}} \cdot \overline{S_{it}}$ and $\overline{x_{it} \cdot S_{it}}$ are as high as 0.986, 0.998 and 0.997, using the three different measures of the current account.[13] Therefore, in this case, the key evidence supporting the K-V "new rule" is essentially the following cross-section regression

$$\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it}} \cdot \overline{S_{it}} + \eta_i \tag{8}$$

It is plausible that there is cross-sectional correlation between x_{it} and S_{it}. For instance, countries which have higher savings may also have a higher share of net foreign assets. But this would automatically invalidate Kraay and Ventura (2000, 2003) as their theory suggests that x should be independent of S, particularly in the cross-section. Allowing for such a correlation, however, would only strengthen our results (below) at the cost of more intricate algebra. For expositional purposes, we will assume that there is no cross-sectional correlation between x_{it} and S_{it}. A technical appendix showing that all results derived below carry through when relaxing this assumption is available upon request.

Why does the point estimate of $\beta_1 = 1$ of equation 8 simply reflect the accounting approximation $\overline{CA_{it}} = x_{iT} \cdot \overline{S_{it}}$? To see this intuitively, compare equation 8 and equation 6. The only difference between the accounting approximation and the regression specification is x_{iT} and $\overline{x_{it}}$. But when the time-series is not too long (for example T=30, where T=30 is more than sufficient for equation 6 to hold), the end-of-period portfolio share x_{iT} and the average portfolio share $\overline{x_{it}}$ are not very different even in the case where x_{it} has a deterministic trend or is non-stationary, cases which would be contrary

[13]These measures correspond to the Lane el al Mark I, Mark II, and the traditional current account measures.

to the "new rule". It follows that running the cross-section regression in Kraay and Ventura (2000, 2003) can always yield $\beta_1 = 1$ as seen in Table 1. While $\beta_1 = 1$ is certainly consistent with the "new rule", $\beta_1 = 1$ is in fact, consistent with any rule. Therefore, it cannot be taken as evidence for, or for that matter against, the "new rule".

To be more concrete, consider the following three possible data generating processes of x:

(a) x is stationary without trend, i.e. $x_{it} = x_i + \varepsilon_{it}$,

(b) x is nonstationary with/without trend, i.e. $x_{it} = \alpha_i + x_{it-1} + \varepsilon_{it}$,

(c) x is a trend-stationary process, i.e. $x_{it} = x_{i0} + \alpha_i t + \sum_{j=1}^{t} \rho^{t-j} \varepsilon_{ij}$,

where subscripts i and t represent country i and year t, respectively. Next we attempt to work out the exact value of β_1 for all three cases by plugging in equation 7 into the regression.

Case (a): The cross-sectional regression specification $\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it}} \cdot \overline{S_{it}} + \eta_i$ yields

$$\beta_1 \simeq \frac{var(x_i \cdot \overline{S_{it}})}{var(x_i \cdot \overline{S_{it}})} = 1 \tag{9}$$

Proof: See appendix.

The intuition is the following: if $x_{iT} = x_i + \varepsilon_{iT}$, it is roughly the case that $x_{iT} = \overline{x_{it}} + \varepsilon_{iT}$. Namely, the end-of-period portfolio share x_{iT} is equal to the average portfolio share plus an error term. The accounting approximation $\overline{CA_{it}} = x_{iT} \cdot \overline{S_{it}}$ then becomes $\overline{CA_{it}} = \overline{x_{it}} \cdot \overline{S_{it}} + \varepsilon_{iT} \cdot \overline{S_{it}}$. Notice that $\varepsilon_{iT} \cdot \overline{S_{it}}$ is by assumption uncorrelated across countries, and denoting it as η_i, the accounting approximation finally becomes $\overline{CA_{it}} = \overline{x_{it}} \cdot \overline{S_{it}} + \eta_i$, precisely the cross-country "regression" in Kraay and Ventura (2000, 2003). So even if their conjecture that x is roughly constant over time is correct, these regression results carry no empirical content, and consequently do not serve as a validation to the growth-effect theory, or the "new rule". In fact, this case mathematically confirms the point made in Van Wincoop (2003), where he argues that any model that has a steady-state portfolio share can deliver $\beta_1 = 1$ in the K-V regression since deviations from the steady state would cancel out when taking averages. Going one step beyond this argument, in case (b) and (c), we will show that even if there were no steady-state portfolio share x, the cross-section variations may still be dominated by the accounting approximation when T is not very long, the case of this particular data sample.

Case (b): The same regression specification yields

$$\beta_1 = \frac{var(x_{i0} \cdot \overline{S_{it}}) + \frac{T+1}{2} A + \frac{T(T+1)}{2} B + C}{var(x_{i0} \cdot \overline{S_{it}}) + \frac{(2T+1)(T+1)}{6T} A + \frac{(T+1)^2}{4} B + C}, \tag{10}$$

where $A = var(\varepsilon_{it}) E(\overline{S_{it}}^2)$, $B = var(\alpha_i \overline{S_{it}})$, and $C = \frac{(T+1)}{2} cov(x_{i0}\overline{S_{it}}, \alpha_i \overline{S_{it}})$.

Proof: See appendix.

The first term of both the numerator and denominator are identical and is a "cross-section variation" involving the initial net foreign asset share and average savings rate. Ignoring the other terms, β_1 is just equal to 1, and this reverts back to case (a). Others terms in the numerator and denominator reflect deviations from case (a). The second terms differ only by a coefficient and contain the variance of the random-walk part of x which we call a "white-noise variation", and their ratio is close to 1.5 when T is very large. The last two terms are related to the trend: the third terms represent the "trend variation" and their ratio converges to 2 when T is very large. The fourth terms, which we group with the cross-section variation term, are identical and their ratio is therefore 1. Consequently, β_1 is a weighted average of 1, 1.5 and 2, the weights depending on the "cross-section variation" (terms 1 and 4), the "white-noise variation" (term 2), the "trend variation" (term 3) and time T. If the "cross-section variation" is large and T is not too large, namely, we are not far away from case (a), more weight is put on 1, and we could see $\beta_1 = 1$. If, however, the "trend variation" is large and/or T is very big, we could see $\beta_1 = 2$. A special case is if $\alpha_i = 0$ for all i, the case where the portfolio share x has no time trend, and the last two trend-related terms (terms 3 and 4) vanishes, so that β_1 is a weighted average of 1 and 1.5.[14] The key is that with a relatively short time series of 31 years in this data sample, it is the case that the cross-section variation dominates both the trend variation and the white noise variation.

To illustrate the order or magnitude, the sample cross-section variation is of order 10^{-4}, the sample white-noise variation is of order $\frac{T}{2}10^{-6}$, and the sample trend variation is of order $\frac{T^2}{2}10^{-7}$. Clearly, with $T = 31$, the cross-section variance (the first term) dominates the rest of the terms. Since case (a) has already shown that the cross-section variation is determined by an accounting approximation, it is difficult to see anything but β_1 equal to 1 because of the relatively short time series. When in

[14] β_1 could be close to 1 if the cross-section variation is large and T is relatively small, and close to 1.5 if the white-noise variation and/or T is very large.

the future will we be able to see $\beta_1 = 2$? The answer is, only after a very long time, and we would always see $\beta_1 = 1$ if using available data. According to the above magnitudes, with 50 years of data, the coefficient will be only 1.25. With 100 years of data, the coefficient can reach 1.5. And it will take more than four centuries for the coefficient to reach 1.9! The important point is that even if x follows a nonstationary process of case (b), which is directly in opposition to the growth-effect's theory of a constant portfolio, $\beta_1 = 1$ cannot be rejected when the "cross-section variance" dominates, precisely the case when the time series is relatively short ($T < 50$).

Case (c): The same regression specification as the above yields

$$\beta_1 = \frac{\mathrm{var}(x_{i0} \cdot \overline{S_{it}}) + E(\frac{1-\rho_i^T-\rho_i^{T+1}+\rho_i^{2T+1}}{T(1-\rho_i)^2(1+\rho_i)}) \cdot A + \frac{T(T+1)}{2} \cdot B + C}{var(x_{i0} \cdot \overline{S_{it}}) + E(\frac{T(1-\rho_i^2)-2\rho_i-\rho_i^2+2\rho_i^{T+1}+2\rho_i^{T+2}-\rho_i^{2T+2}}{T^2(1-\rho_i^2)(1-\rho_i)^2}) \cdot A + \frac{(T+1)^2}{4} \cdot B + C} \tag{11}$$

where $A = var(\varepsilon_{it})E(\overline{S_{it}}^2)$, $B = var(\alpha_i\overline{S_{it}})$, and $C = \frac{(T+1)}{2}cov(x_{i0}\overline{S_{it}}, \alpha_i\overline{S_{it}})$.

Proof: See appendix.

The only change to this formula from the preceding case (equation 10) is the coefficients of the second term of both the numerator and denominator.

Both case (a) and (b) are encompassed in case (c) in the limit.[15] The interesting case where ρ_i is between 0 and 1, the ratio of the second terms will be less than 1 and β_1, a weighted average of 1, a value less than 1, and 2. Again, if the magnitude of the cross-section variation is large and the time series is short, more weight will be put on 1 and we can still obtain $\beta_1 = 1$.[16]

To summarize the theoretical predictions of β_1 for the cross-sectional regression specification:

Case (a): $\beta_1 = 1$.

Case (b): β_1 is a weighted average of $1, 1.5$, and 2, the weights depending on the magnitude of the cross-section variance, the white-noise variance, the trend variance and T. If the cross-section variance is big and time T is relatively small, we can see $\beta_1 = 1$; if the trend variance and/or T is very large, we can see $\beta_1 = 2$.

Case (c): when ρ_i is between 0 and 1, β_1 is a weighted average of 1, a value less than 1, and 2. If the

[15] Note that ρ_i and α_i both being equal to 0 for all i brings us back to the stationary case (a). $\rho_i = 1$ brings us back to the unit root case without trend (if $\alpha_i = 0$ for all i), or the unit root case with trend (if α_i is not 0 for all i), as in case (b). The more interesting case is when ρ_i is between 0 and 1.

[16] However, it is possible to have β_1 being below 1 if the magnitude of the second terms is larger than the magnitude of the third terms in a small sample. But when T becomes very large, β_1 can gradually converge to 2 as in case (b).

cross-section variance is large and T is relatively small, β_1 is equal to 1; if the trend variance is large and/or T is very big, β_1 can be equal to 2.

Clearly, the result that $\beta_1 = 1$ should not be considered as a verification to the growth-effect theory and the result is consistent with all three cases of x. However, at this point, not much can be said about the underlying DGP of x. With 31 years of data, we are stuck with a relatively short time-series that make all of these cases a possibility.

3.2 The Levels Regression

One way to get around this difficulty and to be able to say something about the DGP of x is to do the same exercise for the levels regression, $\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it}} \cdot \overline{S_{it}} + \eta_i$, where CA_{it} and S_{it} are now actually levels of the current account and levels of savings. In the previous section, we are confronted with the puzzling regression result that $\beta_1 = 2$ in this levels specification, even though the "new rule" prescribes the two specifications to be equivalent in predicting $\beta_1 = 1$. The explicit formula of β_1 in this specification is the same as before except that the levels replace shares for each of the terms. As we know, saving rates differ little across countries relative to the difference in the levels of savings across countries, the sizes of economies being remarkably different. Hence, switching to the levels regression amounts to effectively putting more weight on the trend variation term, thus reducing the "short" time series problem by effectively magnifying the "trend variance term" and putting enough weight on 2 so that even with a relatively short time series, we may still observe 2 if the true DGP were case (b) or case (c).[17]

From the data sample, the cross-sectional variation is on the order of magnitude of 10^{19}, the sample white-noise variation, $\frac{T+1}{2}10^{19}$, and the sample trend variation, $\frac{T(T+1)}{2}10^{18}$. With T=31, the number of years in our sample, it is clear that the trend variation term can dominate, pushing β_1 towards 2. In this case, the result that $\beta_1 = 2$ in the levels regression is not consistent with case (a), but with cases (b) and (c). Recall that in the shares regression specification $\beta_1 = 1$ is consistent with all three cases, so that we can conclude that only case (b) and case (c) are the possible true DGP of x. The supporting evidence for the growth-effect theory was in fact misinterpreted.

[17] More specifically, the levels regression puts more weight on large economies and large economies, such as the U.S. and Japan, happen to have trends in their portfolio shares.

4 Empirical Analysis

With the theoretical analysis in the previous section suggesting that the process of x (consistent with $\beta_1 = 2$) is a nonstationary process or a highly persistent process with trend, we proceed to investigate this directly. A first glance at the graphs (Figure 2) of the portfolio share over time for each of the 22 countries seems to suggest that x is unlikely to be constant, but rather changing over time, with some countries seeming to display a secular trend.

To be more concrete, we run a few econometric tests to examine the process of x. Consider the simplest possible case of x following an AR(1) process, where $x_t = \alpha_0 + \alpha_1 x_{t-1} + \varepsilon_t$.[18] Results are reported in Table 4. It is clear that α_1 is very close to 1 (within 2 standard deviations) or even slightly greater than 1, for most countries in our sample. This suggests that x may follow a unit-root process. In this case, we proceed to conduct augmented Dickey-Fuller tests for each individual country. With various specifications that include and exclude time trends and different lengths of time lags, unit roots can be rejected for at most eight countries out of the twenty-two countries in the sample.[19] There are fourteen countries in our sample for which none of the Dickey-Fuller tests can reject unit root at conventional significance levels.

[INSERT FIGURE 2 HERE]

These results notwithstanding, it is a well known fact that these unit root tests have very low power for short time series, not easily rejecting the null hypothesis of a unit root. Given that there are only 31 observations (1973-2003) for each country, the above results cannot be conclusive. Nevertheless, the results of these simple econometric tests show that x is likely to be a highly persistent AR (1) process or a unit root process, with some countries displaying a time trend, effectively giving support to our theoretical analysis in the previous section.[20]

[18] This regression is run for each individual country using the Mark II data, which has the longest time series.

[19] The Dickey-Fuller test without trend or lags rejects unit root for Mexico. The specification including time lags rejects unit roots for Switzerland, Korea and Mexico, and the specification including a time trend rejects Israel and Japan. Including both lags and trends rejects unit roots for Austria, Canada, Switzerland, Japan and New Zealand.

[20] An important caveat is that x being a highly persistent process or unit root process with trend in the very long run is somewhat inconceivable and difficult to reconcile with theories that have a steady-state portfolio share. But available data simply cannot reject this result. This outcome may reflect the fact that the world is still on a transitional path to a new steady state, with countries integrating more deeply into the global economy without having yet fully reached its steady state portfolio equilibrium. Our main point is that so long as the process of x is observationally equivalent to a unit root process with trend for this sample period, the regression result $\beta = 1$ based on this data sample will inevitably be the outcome of the dominance of a cross-sectional variation generated by an account equation. On the other hand, even if x is stationary in the very long run, which may be likely, $\beta_1 = 1$ in a cross-section regression remains to be driven by accounting, and therefore continues to confer no information.

[INSERT TABLE 4 HERE]

We have shown that results taken to be evidence for the growth-effect theory is overturned, both from our theoretical and empirical analysis. The follow-up question is, to what extent should current account movements be attributed to portfolio composition adjustments and to what extent is the growth effect still quantitatively important, according to the synthesized accounting framework?

To see this, we decompose the change in net foreign asset positions into the composition effect and the growth effect using Equation 3 and normalize them by current GDP.[21] Figure 3 plots these two time series for each country. Two salient features emerge: First, the growth effect is smooth and changes slowly. For example, as the U.S. gradually slid into a big debtor in the mid 1980's, the growth effect also gradually turned from positive into negative. The opposite case is Japan, the growth effect becomes more and more positive as Japan accumulates huge foreign assets. The growth effect does seem to capture some long-run movements in the current account but for reasons that are completely different from the one argued by Kraay and Ventura (2000, 2003). It simply reflects an accounting fact: a country that continues to run current account deficits must become a debtor and a debtor country must be running current account deficits on average. Second, the composition effect is very volatile and accounts for most variations of the current account in a country over time. To be more concrete, we perform a variance decomposition exercise on the accounting equation, $CA = \Delta x \cdot W + x \cdot S$. The results are reported in Table 5. Clearly, the composition effect is much more important in explaining the variations of the current account than the growth effect for most countries in our sample.

[INSERT FIGURE 3 HERE]

It is noteworthy that this empirical result is also in line with results that emerge from a numerical example in Tille and Van Wincoop (2008), which decomposes international capital flows generated by the model into the growth effect (portfolio growth) and the composition effect (portfolio reallocation).[22] In their example it is also true that the growth effect is quite smooth while the majority of the variation in the current account is due to the composition effect.[23]

[INSERT TABLE 5 HERE]

[21] Here we use the data taken from the "Mark II" dataset

[22] They further decompose the composition effect into parts that come from changes in expected excess returns and that which come from time-varying second moments. See Chart 8 and 9 in Tille and Van Wincoop (2008).

[23] More specifically, it is due to time-varying second moments.

5 Conclusion

We have analyzed a non-structural framework of the current account that is based upon an important accounting identity that highlights two channels of current account adjustment: a composition effect and a growth effect. The framework is general enough to nest the majority of the literature on the portfolio view of the current account, while allowing for the interplay between the composition effect and the growth effect also emphasized in the recent general equilibrium portfolio models. This framework can be used as a guideline for more specific theories, which will have to be compatible with our empirical findings regarding the quantitative importance of the two effects.

We have shown that partial equilibrium models, without reference to a synthesized framework may give rise to misleading interpretations of current account movements. Our basic message is clear: never again run a K-V-type cross-country regression regardless of the underlying DGP of the portfolio share; there is simply no information embedded in this regression. It is therefore clear that partial equilibrium portfolio models cannot supplant general equilibrium models in explaining external adjustments despite their seemingly remarkable empirical success in the past.

This paper attempts to further the very little existing empirical work on portfolio models of the current account. Using the accounting framework as a guideline, we theoretically and empirically overturn the growth effect theory, and reestablish the composition effect as the quantitatively significant driver of current account dynamics. Using both direct and indirect empirical evidence, we show that the net foreign asset share is far from being constant or even stationary, as is required by a growth-effect theory, but is in fact a highly persistent process or a unit root process, with some countries displaying a trend. Along with general equilibrium models, this synthesized framework points to the components that matter for the current account, including the components that have not mattered so much in the past but may potentially matter quite substantially in the future. In a world with exploding gross holdings of external assets and liabilities, it is possible that the growth effect may overtake the composition effect in contributing to current account dynamics, and the systematic inclusion of it despite its small relevance in the past data may become essential. Newly developed general equilibrium models embody precisely this level of comprehensiveness and can therefore serve to be a benchmark for future analyses on portfolio views of external imbalances. In a financial world that is integrating ever more profoundly, theoretical and empirical work in this area need to keep up with global trends– furthering our understanding of the facts and the theory will be important for handling the massive global capital flows that we will, in all likelihood, continue to witness.

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6 Appendices

6.1 Appendix A: Data Description

Our dataset consists of 22 OECD countries. The countries include Austria, Australia, Canada, Switzerland, Germany, Denmark, Spain, Finland, France, Great Britain, Ireland, Israel, Italy, Japan, Korea, Mexico, Netherlands, Norway, New Zealand, Portugal, Sweden, and the U.S.[24] We select post-1973 data, the years after Bretton Woods collapsed.

For measures of the net foreign asset position and the current account, we use both the traditional measure taken from the IIP data in IFS and "Mark I" and "Mark II" estimates from Lane et al (2001) and Lane et al (2007), which consistently account for valuation effects and capital gains, although the methodologies have slightly changed from one dataset to another. They provide an accounting framework which highlights the link between the balance and payment flows and the underlying stocks, as well as the impact of unrecorded capital flight, exchange rate fluctuations, debt reduction, and valuation changes not captured in the conventional current account definition. Through this link, they show that one method of estimating net foreign assets is cumulating the current account and adjusting for the capital account balance. We take their net foreign asset measure, which is just the "adjusted-cumulative current account". For our current account, we take the first difference of their "adjusted cumulative current account" measure with consistent capital gains and losses and valuation effects. By doing so, we effectively capture the valuation effect and capital gains and losses for both the current account and net foreign assets measure.

To measure the domestic capital stock, we use the perpetual inventory method:[25] we cumulate gross domestic investment in current U.S. dollars taken from the World Bank's Global Development Indicators, assuming a depreciation rate of 4 percent a year, and in each year revaluing the previous year's stock using the U.S. GDP deflator. We take 1965 as the starting year. The capital stock in 1965 is estimated using the average capital-output ratio over the period 1960-1965 in Nehru and Dhareshwar (1993), multiplied by GDP in 1965. All variables are denoted in current U.S. dollars.

6.2 Appendix B

Case (a):

Since $x_{it} = x_i + \varepsilon_{it}$, in particular, we have $x_{iT} = x_i + \varepsilon_{iT}$ and $\overline{x_{it}} = x_i + \frac{\sum_{j=1}^{T} \varepsilon_{ij}}{T} \simeq x_i$, where the second equality come from the fact that the average of independent shocks is approximately 0 (a more detailed derivation without taking this approximation is available upon request). Equation 7,

[24] We omit the following OECD countries: Belgium, Greece, Hungary, and Luxemburg, Czech Republic, Poland, Slovak Republic, and Turkey for the reason that, except for Belgium and Luxembourg, these countries do not have full time series of all variables between 1973 and 2003. Belgium and Luxembourg are omitted because they are often reported as one in some datasets while reported separately in others.

[25] Kraay and Ventura (2000) uses the same methodology in constructing their dataset of 13 countries over 1973-1995.

$\overline{CA_{it}} = x_{iT} \cdot \overline{S_{it}}$, implies that $\overline{CA_{it}} = (x_i + \varepsilon_{iT}) \cdot \overline{S_{it}}$. Plugging these equations into the regression $\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it}} \cdot \overline{S_{it}} + \eta_i$, we then have $(x_{it} + \varepsilon_{iT}) \cdot \overline{S_{it}} = \beta_0 + \beta_1(x_i) \cdot \overline{S_{it}} + \eta_i$. Therefore $\beta_1 = \frac{cov((x_i \cdot \overline{S_{it}}, (x_i+\varepsilon_{iT}) \cdot \overline{S_{it}})}{var((x_i \cdot \overline{S_{it}})} = \frac{var(x_i \cdot \overline{S_{it}})}{var(x_i \cdot \overline{S_{it}})} = 1$. For the savings rate case, simply replace $\overline{S_{it}}$ by $\frac{\overline{S_{it}}}{Y_{it}}$.

Case (b):

Since $x_{it} = \alpha_i + x_{it-1} + \varepsilon_{it}$, we have $x_{it} = x_{i0} + \alpha_i t + \sum_{j=1}^{t} \varepsilon_{ij}$. In particular, $x_{iT} = x_{i0} + \alpha_i T + \sum_{j=1}^{T} \varepsilon_{ij}$ and $\overline{x_{it}} = x_{i0} + \frac{\alpha_i(T+1)}{2} + \frac{T\varepsilon_{i1}+(T-1)\varepsilon_{i2}+\ldots\varepsilon_{iT}}{T}$. Again, equation (7) $\overline{CA_{it}} = x_{iT} \cdot \overline{S_{it}}$ implies that $\overline{CA_{it}} = (x_{i0} + \alpha_i T + \sum_{j=1}^{t} \varepsilon_{ij}) \cdot \overline{S_{it}}$. Plugging these equations into the the regression

$\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it}} \cdot \overline{S_{it}} + \eta_i$, we then have $\beta_1 = \frac{cov((x_{i0}+\alpha_i T+\sum_{j=1}^{T} \varepsilon_{ij}) \cdot \overline{S_{it}}, (x_{i0}+\frac{\alpha_i(T+1)}{2}+\frac{T\varepsilon_{i1}+(T-1)\varepsilon_{i2}+\ldots\varepsilon_{iT}}{T}) \cdot \overline{S_{it}})}{var(x_{i0}+\frac{\alpha_i(T+1)}{2}+\frac{T\varepsilon_{i1}+(T-1)\varepsilon_{i2}+\ldots\varepsilon_{iT}}{T}) \cdot \overline{S_{it}})}$.

Expanding the variances and covariances term by term, we obtain finally $\beta_1 = \frac{var(x_{i0} \cdot \overline{S_{it}}) + \frac{T+1}{2} A + \frac{T(T+1)}{2} B + C}{var(x_{i0} \cdot \overline{S_{it}}) + \frac{(2T+1)(T+1)}{6T} A + \frac{(T+1)^2}{4} B + C}$,

where $A = var(\varepsilon_{it}) E(\overline{S_{it}}^2)$, $B = var(\alpha_i \overline{S_{it}})$, and $C = \frac{(T+1)}{2} cov(x_{i0}\overline{S_{it}}, \alpha_i \overline{S_{it}})$.

Notice that for the case that $\alpha_i = 0$ for all i (non-stationary case without trend), we have $\beta_1 = \frac{var(x_{i0} \cdot \overline{S_{it}}) + \frac{T+1}{2} var(\varepsilon_{it}) E(\overline{S_{it}}^2)}{var(x_{i0} \cdot \overline{S_{it}}) + \frac{(2T+1)(T+1)}{6T} var(\varepsilon_{it}) E(\overline{S_{it}}^2)}$. For the savings rate case, simply replace $\overline{S_{it}}$ by $\frac{\overline{S_{it}}}{Y_{it}}$.

Case (c):

Since $x_{it} = x_{io} + \alpha_i t + \sum_{j=1}^{t} \rho_i^{t-j} \varepsilon_{ij}$, in particular, we have $x_{iT} = x_{i0} + \alpha_i T + \sum_{j=1}^{T} \rho_i^{T-j} \varepsilon_{ij}$ and $\overline{x_{it}} = x_{i0} + \frac{\alpha_i(T+1)}{2} + \frac{\frac{1}{1-\rho_i} \sum_{j=1}^{T} (1-\rho_i^{T+1-j})\varepsilon_{ij}}{T}$. Again, Equation (7), $\overline{CA_{it}} = x_{iT} \cdot \overline{S_{it}}$, implies that $\overline{CA_{it}} = (x_{i0} + \alpha_i T + \sum_{j=1}^{T} \rho_i^{T-j} \varepsilon_{ij}) \cdot \overline{S_{it}}$. Plugging these equations into the regression $\overline{CA_{it}} = \beta_0 + \beta_1 \overline{x_{it}} \cdot \overline{S_{it}} + \eta_i$, we then have

$$\beta_1 = \frac{cov((x_{i0}+\alpha_i T+\sum_{j=1}^{T} \rho_i^{T-j} \varepsilon_{ij}) \cdot \overline{S_{it}}, (x_{i0}+\frac{\alpha_i(T+1)}{2}+\frac{\frac{1}{1-\rho_i} \sum\limits_{j=1}^{T} (1-\rho_i^{T+1-j})\varepsilon_{ij}}{T}) \cdot \overline{S_{it}})}{var(x_{i0}+\frac{\alpha_i(T+1)}{2}+\frac{\frac{1}{1-\rho_i} \sum\limits_{j=1}^{T} (1-\rho_i^{T+1-j})\varepsilon_{ij}}{T}) \cdot \overline{S_{it}})}.$$

Expanding the variances and covariances term by term, we obtain finally

$$\beta_1 = \frac{var(x_{i0} \cdot \overline{S_{it}}) + E(\frac{1-\rho_i^T-\rho_i^{T+1}+\rho_i^{2T+1}}{T(1-\rho_i)^2(1+\rho_i)}) \cdot A + \frac{T(T+1)}{2} \cdot B + C}{var(x_{i0} \cdot \overline{S_{it}}) + E(\frac{T(1-\rho_i^2)-2\rho_i-\rho_i^2+2\rho_i^{T+1}+2\rho_i^{T+2}-\rho_i^{2T+2}}{T^2(1-\rho_i^2)(1-\rho_i)^2}) \cdot A + \frac{(T+1)^2}{4} \cdot B + C},$$

where $A = var(\varepsilon_{it}) E(\overline{S_{it}}^2)$, $B = var(\alpha_i \overline{S_{it}})$, and $C = \frac{(T+1)}{2} cov(x_{i0}\overline{S_{it}}, \alpha_i \overline{S_{it}})$. For the savings rate case, simply replace $\overline{S_{it}}$ by $\frac{\overline{S_{it}}}{Y_{it}}$.

Figure 1: Duplication of Kraay and Ventura (2000, 2003) Results

itbpF4.8637in2.5676in0inFigure

itbpF4.8473in2.5668in0inFigure

itbpF4.8473in2.5676in0inFigure

This figure duplicates the cross-country regression in Kraay and Ventura (2000, 2003) using our own datasets. The top panel uses the traditional current account, the middle panel uses the valuation-adjusted current account taken from the Lane et al "Mark I" dataset and the bottom panel uses the valuation-adjusted current account taken from the Lane et al "Mark II" dataset.

Figure 2: Evolution of x over Time

itbpF3.2335in2.2027in0inFigure itbpF3.2647in2.2217in0inFigure

itbpF3.2197in2.2113in0inFigure itbpF3.2681in2.2477in0inFigure

This figure depicts the evolution of x over time for each country, where x represents the share of net foreign assets in total assets. The data is taken from the "Mark II" dataset and the time frame is from 1973 to 2003.

Figure 3: A Decomposition of the Current Account

itbpF2.9196in1.5973in0inFigure itbpF2.93in1.6077in0inFigure

itbpF2.9092in1.5869in0inFigure itbpF2.9092in1.5973in0inFigure

itbpF2.9196in1.6181in0inFigure itbpF2.9092in1.6077in0inFigure

itbpF2.9092in1.5973in0inFigure itbpF2.9092in1.6077in0inFigure

itbpF2.9196in1.6181in0inFigure itbpF2.9092in1.6077in0inFigure

Figure 3: Continued

itbpF2.8772in1.4927in0inFigure itbpF2.8876in1.4823in0inFigure

itbpF2.9092in1.5031in0inFigure itbpF2.9092in1.5031in0inFigure

itbpF2.9092in1.4927in0inFigure itbpF2.9196in1.4927in0inFigure

itbpF2.8988in1.4927in0inFigure itbpF2.9092in1.4823in0inFigure

itbpF2.8988in1.4927in0inFigure itbpF2.9092in1.4927in0inFigure

Figure 3: Continued

itbpF2.9058in1.5031in0inFigure itbpF2.8988in1.4927in0inFigure

This figure depicts a decomposition of the current account for each country. The solid line represents the composition effect and the dash line represents the growth effect, both of which are in terms of shares of current GDP. The data is taken from the "Mark II" dataset and the time frame is 1973-2003.

Table 1: Duplication of Kraay and Ventura (2000, 2003) Results

	Traditional CA	Mark I Data	Mark II Data
(Gross National Savings/GDP)	0.86	0.939	1.02
$\times$(Foreign Assets/Total Assets)	(0.136)	(0.093)	(0.070)
R^2	0.689	0.835	0.869
Number of Observations	20	22	22
P-value for null hypothesis that coefficient on saving$\times$foreign assets=1	0.3276	0.5178	0.7990

This table reports the results of estimating $\overline{CA_{it}} = \beta_0 + \beta_1(\overline{x_{it} \cdot S_{it}}) + \eta_i$, where $\overline{CA_{it}}$ and $\overline{x_{it} \cdot S_{it}}$ denote the average current account to GDP ratio and average savings rate multiplied by net foreign asset ratio in country i over the sample period; and η_i is the error term. Standard errors are in parentheses and are corrected for heteroskedasticity.

Table 2: The K-V Within Regression

Country	Traditional CA	Obs	Mark I Data	Obs	Mark II Data	Obs
AUS	0.592(.349)	31	-0.668(.650)	26	-2.547(.964)	31
AUT	2.017(.636)	31	1.115(.883)	26	1.129(1.693)	31
CAN	2.272(.400)	31	3.196(.966)	26	1.239(.701)	31
CHE	1.406(.641)	21	2.596(.813)	26	3.454(.252)	31
DEU	1.914(.671)	21	2.402(.886)	26	2.530(.884)	31
DNK	0.118(.409)	13	1.800(.748)	26	-0.317(1.066)	31
ESP	0.616(.315)	31	2.972(1.179)	26	1.673(1.170)	31
FIN	-0.588(.156)	31	-0.506(.898)	26	-1.638(.155)	31
FRA	0.242(.517)	29	1.700(1.002)	26	2.932(1.338)	31
GBR	0.885(.476)	31	3.557(1.238)	26	2.524(1.067)	31
IRL	N.A.		2.045(.580)	26	1.461(.803)	31
ISR	-0.321(.658)	15	2.117(.806)	26	-2.626(1.234)	31
ITA	0.513(.802)	31	.422(1.171)	26	1.147(1.592)	31
JPN	1.512(.322)	31	1.588(.224)	26	2.407(.640)	31
KOR	0.700(1.532)	18	2.278(.355)	26	0.996(.261)	31
MEX	N.A.		-0.726(1.141)	26	-2.200(.775)	31
NLD	-0.357(.292)	28	2.587(.523)	26	0.660(1.353)	31
NOR	2.515(.509)	20	2.328(.599)	26	2.669(.416)	31
NZL	0.224(.293)	15	-1.953(.643)	26	-2.182(.307)	31
PRT	0.453(.650)	8	-0.420(1.067)	26	0.404(1.094)	31
SWE	-0.969(.468)	31	-0.054(.971)	26	1.603(1.695)	31
USA	1.784(0.308)	28	1.810(.283)	26	1.600(.711)	31

This table reports the results of estimating the K-V within regression (time series) for each country using different measures of the current account. Standard errors are in parentheses.

Table 3: Levels-Regression Results of the K-V Specification

	Traditional CA	Mark I Data	Mark II Data
(Gross National Savings)	2.175	1.942	1.712
×(Foreign Assets/Total Assets)	(0.408)	(0.167)	(0.386)
R^2	0.6123	0.8711	0.8183
Number of Observations	20	22	22
P-value for null hypothesis that coefficient on saving×foreign assets=2	0.6723	0.7321	0.464

This table reports the results of estimating $\overline{CA_{it}} = \beta_0 + \beta_1(\overline{x_{it} \cdot S_{it}}) + \eta_i$, where $\overline{CA_{it}}$ and $\overline{x_{it} \cdot S_{it}}$ denote the average current account and average savings multiplied by net foreign asset ratio in country i over the sample period; and η_i is the error term. Standard errors are in parentheses and are corrected for heteroskedasticity.

Table 4: First-Order Autocorrelation of x

Country	AUS	AUT	CAN	CHE	DEU	DNK	ESP	FIN
α_1	0.947	0.723	0.968	0.644	0.908	0.930	1.016	0.673
	(0.086)	(0.117)	(0.052)	(0.148)	(0.081)	(0.086)	(0.101)	(0.139)
α_0	-0.012	-0.012	0.0003	0.081	0.002	0.002	-0.004	-0.047
	(0.011)	(0.005)	(0.006)	(0.033)	(0.003)	(0.012)	(0.006)	(0.030)
Country	FRA	GBR	IRL	ISR	ITA	JPN	KOR	MEX
α_1	0.824	0.875	0.881	0.732	0.869	0.955	0.943	0.644
	(0.099)	(0.098)	(0.087)	(0.125)	(0.105)	(0.082)	(0.033)	(0.120)
α_0	0.000	0.000	-0.023	-0.041	-0.005	0.003	0.003	-0.065
	(0.002)	(0.004)	(0.020)	(0.019)	(0.003)	(0.003)	(0.006)	(0.021)
Country	NLD	NOR	NZL	PRT	SWE	USA		
α_1	0.867	1.090	0.888	1.082	0.830	1.036		
	(0.094)	(0.058)	(0.075)	(0.093)	(0.097)	(0.053)		
α_0	-0.002	0.010	-0.040	0.001	-0.010	-0.003		
	(0.006)	(0.004)	(0.023)	(0.010)	(0.007)	(0.002)		

This table reports the results for estimating $x_t = \alpha_0 + \alpha_1 x_{t-1} + \varepsilon_t$ for each country in the sample using the "Mark II" dataset, where x_t denotes the share of foreign assets in total assets in year t; and ε_t is the error term. The time period is 1973-2003. Standard errors are in parentheses.

Table 5: Variance Decomposition of the Current Account

Country	R^2	Composition Effect	Growth Effect	$2 \cdot Cov$
AUS	0.9820	1.193	0.06	-0.251
AUT	0.9800	1.140	0.067	-0.207
CAN	0.9723	1.207	0.058	-0.269
CHE	0.9894	0.578	0.100	0.344
DEU	0.9965	1.125	0.044	-0.125
DNK	0.9747	1.433	0.096	-0.507
ESP	0.9938	0.943	0.035	0.039
FIN	0.8611	1.692	0.177	-0.846
FRA	0.9985	1.062	0.013	-0.075
GBR	0.9952	1.105	0.042	-0.147
IRL	0.9666	0.914	0.058	0.028
ISR	0.9771	1.390	0.083	-0.443
ITA	0.9945	1.041	0.023	-0.064
JPN	0.9903	0.745	0.089	0.140
KOR	0.9837	1.201	0.052	-0.253
MEX	0.9471	1.294	0.353	-0.647
NLD	0.9835	1.272	0.044	-0.316
NOR	0.9993	0.683	0.051	0.266
NZL	0.9190	2.028	0.389	-1.417
PRT	0.9966	0.927	0.016	0.057
SWE	0.9928	1.143	0.020	-0.163
USA	0.9919	0.921	0.068	0.011

This table reports the variation decomposition of the current account for each country in the sample according to equation 3. The R^2 is the proportion of the variation of current account that can be explained by this equation. The formula for the variance decomposition is $var(\Delta x \cdot W + x \cdot S) = var(\Delta x \cdot W) + var(x \cdot S) + 2cov(\Delta x \cdot W, x \cdot S)$.The three terms on the right correspond to the composition effect, growth effect and $2 * cov$ in the table, respectively, the sum of which should be 1.