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Demography, Financial Openness, National Savings and External Balance[#]

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Abstract

This paper examines the impact of demographic factors on saving, investment, and external balances. We derive a number of semi-structural equations from national accounting principle and the principle that external balances for the world as a whole must sum to zero. The resulting equations embody both closed, partially open and completely open economies as special cases, and are arguably more properly specified than those previously used in the literature. We apply these semi-structural equations to a large panel data set. While our findings by and large are in agreement with most previous studies, our semi-structural equations give much more plausible estimation results for saving and investment than conventional specification.

Key words: Demography, openness, saving, investment, current account, panel data

JEL Classification: E21, F32, J10

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1. Introduction

This paper examines the effects of demography and other factors on national saving, domestic investment and external (trade and current account) balances. The paper weaves two strands of empirical literature. The first strand of the literature that we refer to focuses on the effects of demography on national saving, investment, growth and the current account balance. The second strand of the literature focuses on the determinants of current account imbalances. The main difference between these strands of literature lies in their choice of explanatory variables for empirical testing. The first strand of the literature devotes considerable attention to the specification of demography. For instance, instead of just including youth and old-age dependence ratios, Higgins and Williamson (1997) and Higgins (1998) refer to information on the entire demographic structure of a population, and Li, Zhang and Zhang (2007) consider the joint effects of longevity, old-age dependency and the fertility rate. These studies, however, pay comparatively little attention to international factors. On the other hand, the second strand of the literature, while more parsimonious on demography, is much more elaborative on international factors. Chinn and Prasad (2003), for example, include measures for capital controls and financial deepening as right-hand variables. Chinn and Ito (2007) extend this approach and add measures for institutional quality, and Gruber and Kamin (2007) as well as Legg, Prasad and Robinson (2007) incorporate variables for financial crises in order to test the world "saving glut" hypothesis.

While the two bodies of literature are increasingly elaborative regarding the *content* of the numerous regression models, little attention has so far been devoted to the *structure* of those models. The contribution of the present study is to develop a modeling framework based on the national income identities for open and closed economies. On this basis, we derive a number of "semi-structural equations" for saving, investment, as well as for the external balances. These open-economy semi-structural equations incorporate the closed, partially open, and completely open economies as special cases, and are arguably more properly specified than those previously used in the literature. For our empirical analyses, we construct a panel dataset of 74 countries and 25 years from 1980 to 2004. It comprises national account data, balance of payments statistics, data on demography as well as data on a number of variables to control for other potentially important factors, such as institutional quality. Using this dataset, we find that while our results by and large are in agreement with most previous studies, our semi-structural equations give much more plausible estimation results for saving and investment than conventional specifications. On the other hand, for trade and current account balances, there is no clear evidence that the semi-structural equations outperform the conventional specifications.

From a policy perspective, our analyses are important as they allow making predictions on the net foreign asset position of an economy that is driven by demographic change. This will be crucial to assess strategies designed to cope with the demographic transitions that are going to take place in the next few decades.

The rest of the paper is organized as follows. Section 2 reviews both the population ageing and current account balance literatures. Section 3 derives the models. Section 4 describes the data used for empirical analyses. Section 5 discusses the results and the final section concludes.

2. Literature review

A recent paper that is closely related to our research is the study by Li, Zhang and Zhang (2007) (LZZ hereafter). The paper examines the effects of population aging on saving, investment and growth. While this is an old theme, previous studies focused on either old-age dependency or longevity as the "representative" character of population aging, in comparison, LZZ investigate the joint effects of both longevity and old-age dependency. Considering both factors simultaneously is crucial because while both rising longevity and rising old-age dependency are characteristics of population aging, their theoretical impacts on saving, investment and thus on growth are different. On the one hand, as people expect to live longer, they are induced to invest more in their human capital and hence will save more as well. The implication of greater human capital investment is that it will raise the marginal product of capital and thus investment; therefore, longevity can be growth enhancing. The empirical findings of Ehrlich and Lui (1991) and Barro and Sala-i-Martin (2004, Ch. 12) give support to this argument.[1] On the other hand, higher old-age dependency means more dissavers relative to savers, as suggested by standard life cycle models. If the economy is closed, as being the case of the theoretical underpinning of the empirical

[1] Different from LZZ, Barro and Sala-i-Martin (2004) interpret longevity as an indicator of good working habits and high levels of skills.

work in LZZ, then domestic investment has to be funded by domestic saving, and therefore rising old-age dependency is most likely to have a growth-repressing effect.

The current paper is an open economy extension of Li et al. (2007). The motivation is as follows. If an economy is not closed, domestic savings do not have to be equal to domestic investment, and the wedge between them will simply be equal to the trade balance (i.e. net exports). If both domestic saving and investment are functions of longevity and the old-age dependency rate, so should be the trade balance. However, there are two issues in this extension. Firstly, the size of capital inflows (i.e. a trade deficit) or outflows for an economy depends not only on the pace of its population aging, but also on that of the other countries. In other words, it is the relative pace of aging across countries rather than its absolute pace of aging in a single country that contributes to determine external balances. Secondly, it is reasonable to assume that for a given relative pace of aging across countries, the capital flows will depend on institutional factors as well. Amongst these, an economy's financial openness should be crucial. The current paper takes both issues into account in extending the study beyond the previous literature.

The paper is related to a large strand of the literature on population ageing. Within this literature, Higgins and Williamson (1997) and Higgins (1998) examine the effect of youth and old-age dependency on capital flows using regression analyses. They find that, consistent with the life cycle hypothesis, countries with relatively young populations are capital importers whereas those with relatively old populations are capital exporters. Amongst the two studies, only Higgins (1998) controls for openness. He finds that demography does not affect the trade balance in economies classified as closed based on the Sachs and Warner (1995) binary measure of openness. Our study differs from these two studies in two aspects. First, like LZZ, we consider both longevity and age dependency as co-determinants of external balances. Second, we take into consideration relative rather than absolute demography shifts across countries. This acknowledges the fact that for the world as a whole, external balances must sum to zero and, therefore, the demographic effect on one economy's external balance must be matched by the demographic effects on some other economies. In recent years, a number of studies examining the demographic effects on capital flows acknowledge that, in the general equilibrium, external balances must be equal to zero for the world economy as a whole. These include Feroli (2003), Domeij and Flodén (2006), Attanasio, Kitao, and Violante (2006).

Attanasio, Kitao, and Violante (2006) examine the macroeconomic and growth impacts of demographic change using a two-region (a less and a more developed regions) simulation model. One of their key findings is that the prevalence of the PAYG (pay-as-you-go) pension system in both regions will have impacts on factor prices and, thus, on capital flows. Although they only simulate the scenario of frictionless capital movement (besides no capital movement at all), they argue that this is not necessarily a problem because soon there will be capital movement from the less developed region to the more developed one due to the faster ageing of the latter's population. Since the more developed region has lower risks and better institutions, the flows of capital will be much more frictionless than in the other direction. Feroli (2003) and Domeij and Flodén (2006) use a calibrated general equilibrium model to simulate the trade balances of OECD countries over time and compare them to the actual numbers. They find that demographic factors explain a small but statistically significant fraction of the long run capital flows among the OECD countries. These studies use numerical simulations as their main investigation tool, in contrast to the regression analyses used in the current paper.

Another strand of related studies seeks to explain current account imbalances, e.g. Chinn and Prasad (2003), Chinn and Ito (2007), Gruber and Kamin (2007), and Legg, Prasad and Robinson (2007). The last two studies emphasize the effect of the last financial crisis in Asia as a catalyst of their compulsion to build up large foreign reserves, known as the global saving glut hypothesis (Bernanke 2005). Demographic variables are regular features in all these empirical papers. In focusing on the effect of demography on external balances, these and the current studies are essentially examining whether the individual life cycle saving behaviour reflected at the aggregate, national level.

Lastly, in reviewing the literature, Masson, Bayoumi and Samiei (1998) observe that cross-country or panel data are more instrumental than individual country time series data in identifying demographic effects on saving. They conjecture that this is probably because for the data sets usually referred to, the variation of demographic variables is greater across countries than across time. Accordingly, we shall try to fully exploit the cross-sectional variance of our exogenous variables. To this end, our paper draws on a large panel data set that covers 43 to 74 countries (depending on data coverage for a particular regression) over the years from 1980 to 2004.

3. Models

3.1 Semi-structural equations

We specify the domestic saving function in the following general form (we abstract from the time dimension for the moment):

$$S_i = (1-\theta_i)\, f(X_i) + \theta_i\, g(X_i, \bar{X}_i)\,, \qquad (1)$$

where S_i is domestic saving as a share of GDP in country *i*; θ_i is a measure of financial openness (1 for fully open, 0 for completely closed); X_i is a set of explanatory variables (for details, see next section); and $\bar{X}_i$ measures the value of the same variables as in X_i, but for the rest of the world (ROW). For example, if a particular element of X_i measures the inflation in the home country, the corresponding element of $\bar{X}_i$ measures world inflation excluding the home country.

For a closed economy, $\theta_i = 0$ and, thus, S_i only depends on domestic factors. For an open economy, domestic investment depends not only on domestic factors, but also on foreign factors. For instance, an increase in access to more developed foreign financial markets may stimulate domestic saving (and capital outflows).

Similarly, the investment function is specified as

$$I_i = (1-\theta_i) h(X_i) + \theta_i\, k(X_i, \bar{X}_i)\,, \qquad (2)$$

where I_i is national investment as a share of GDP. The set of *X* is assumed to be large enough to cover all variables that are important determinants of one or more dependent variables examined in the paper.

Again, in a closed economy, domestic investment only depends on domestic factors. For an open economy, it will also depend on foreign factors. For instance, better overseas risk-adjusted returns could stimulate capital outflow and lower domestic real investment.

Referring to the national income identity, in the notation introduced above, the trade balance can be stated as

$$TB_i = S_i - I_i = (1-\theta_i)[f(X_i) - h(X_i)] + \theta_i\,[g(X_i, \bar{X}_i) - k(X_i, \bar{X}_i)]\,, \qquad (3)$$

where TB_i denotes the trade balance as a share of GDP. Since TB_i must be equal to zero for a closed economy (i.e. $TB_i(\theta_i = 0) \equiv 0$), we have the following identity:

$$f(X_i) \equiv h(X_i) \tag{4}$$

Ex ante, planned saving and planned investment are not necessarily equal unless by coincidence. Ex post, prices on goods and financial markets or – due to the multiplier effect – quantities will adjust to equate the two.[2] Therefore, (3) can be simplified into

$$TB_i = \theta_i \psi(X_i, \bar{X}_i)\,. \tag{5}$$

Due to symmetry, X_i and $\bar{X}_i$ should have opposite effects on TB_i. Therefore, if the variables in these sets are expressed in terms of percentage or shares of GDP,[3] it is reasonable to assume that

$$TB_i = \theta_i \psi(X_i - \bar{X}_i)\,. \tag{6}$$

The current account balance is equal to the trade balance plus income and current transfers. As a result, the current account balance and the trade balance are closely related to each other. Therefore, we can estimate current account balance equations as a variant of the trade balance equation:

$$CA_i = \theta_i \phi(X_i - \bar{X}_i)\,, \tag{7}$$

where CA_i is the current account balance as a share of GDP.

Assuming $f(.)$, $g(.)$, $h(.)$, $k(.)$, $\psi(.)$ and $\phi(.)$ are linear functions of their arguments, we can write down the following reduced-form panel regression models, which now include the time dimensions:

$$S_{i,t} = \alpha_0 + \alpha_1 X_{i,t} + \alpha_2 \theta_{i,t} Y_{i,t}(X_{i,t} - \bar{X}_{i,t}) + c_i + \tau_t + u_{i,t}\,, \tag{8}$$

$$I_{i,t} = \beta_0 + \beta_1 X_{i,t} + \beta_2 \theta_{i,t} Y_{i,t}(X_{i,t} - \bar{X}_{i,t}) + c_i + \tau_t + v_{i,t}\,, \tag{9}$$

$$TB_{i,t} = \gamma_0 + \gamma_1 \theta_{i,t} Y_{i,t}(X_{i,t} - \bar{X}_{i,t}) + c_i + \tau_t + e_{i,t}\,, \tag{10}$$

$$CA_{i,t} = \lambda_0 + \lambda_1 \theta_{i,t} Y_{i,t}(X_{i,t} - \bar{X}_{i,t}) + c_i + \tau_t + \varepsilon_{i,t}\,, \tag{11}$$

where c_i and τ_t are country and time specific fixed effects; $u_{i,t}, v_{i,t}$, $e_{i,t}$, and $\varepsilon_{i,t}$ are error terms; and $Y_{i,t}$ is the <u>inverse</u> of the relative size of the domestic economy compared to the world average.

The specifications of $\bar{X}_{i,t}$ and $V_{i,t}$ are given by

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[2] The Keynesian tradition assumes that quantities react quicker than prices (and interest rates), hence saving (which is largely seen as a function of income) and investment would *ex post* be equilibrated by changes to GDP, whereas the neoclassical tradition assumes that savings are sensitive to the real interest rate, which will hence adapt and thus ensure that the *ex post* identity holds.

[3] Variables that are not expressed in percentages or shares of GDP, such as income, enter our model in logarithmic form.

$$\bar{X}_{i,t} = \frac{\sum_{j \neq i} \theta_{j,t} GDP_{j,t} X_{j,t}}{\sum_{j \neq i} \theta_{j,t} GDP_{j,t}}, \tag{12}$$

$$Y_{i,t} = \frac{1}{GDP_{i,t}} \frac{\sum_{j} \theta_{j,t} GDP_{j,t}}{\sum_{j} \theta_{j,t}}, \tag{13}$$

where $GDP_{i,t}$ is real gross domestic product (total, not per capita); $\bar{X}_{i,t}$ is the weighted average of $X_{j,t}$, $j \neq i$, and the weight is equal to economic size adjusted for openness. In constructing the world average economic size in (13), the size of each country is also weighted by its openness. Note that $Y_{i,t}$ is an inverse measure of the relative economic size of the home country, so it will be larger than one for small economies and smaller than one for large economies.

The specifications of equations (8) to (11) differ from those in the existing literature in a number of important aspects. Firstly, in computing the value of $\bar{X}_{i,t}$, we use economic size ($GDP_{j,t}$) adjusted for openness ($\theta_{j,t}$) as a weight, while the common practice in the literature is to use only economic size without adjusting for openness:

$$\tilde{X}_{i,t} = \frac{\sum_{j \neq i} GDP_{j,t} X_{j,t}}{\sum_{j \neq i} GDP_{j,t}}. \tag{14}$$

We argue that our specification is theoretically sounder because a foreign country's economic conditions would have influence on the home country only to the degree that the *foreign country* is economically open.[4] To compare our specification with the prevailing one, we will also estimate the above equations using $\tilde{X}_{i,t}$ without the interaction term $\theta_{i,t} Y_{i,t}$.

Secondly, the openness of the home country ($\theta_{i,t}$) enters the equations interacting with all terms in association with an open economy (i.e. $X_{i,t} - \bar{X}_{i,t}$), rather than as a stand-alone explanatory variable, as in previous studies. We argue that this specification is also theoretically sounder because foreign economic conditions can

[4] However, empirically we found that $\bar{X}$ and $\tilde{X}$ are highly correlated for most variables included in this study.

affect the home country only to the degree that the *home country* is economically open.

Thirdly, all terms in association with an open economy are weighted by the relative size of the home country ($Y_{i,t}$). We are not aware of any other study in the related literature using this specification. The reason for this specification is clear when we look at equation (11). Consider the counterfactual case that $Y_{i,t}$ does not appear in the equation. Suppose that the world consists of two countries and the home country is twice the size of the foreign country. Then further suppose $\theta_{i,t} = 1$ and $\Delta(X_{i,t} - \bar{X}_{i,t}) = 1$. Thus, other things equal, $\Delta CA_{i,t} = \lambda_1$. Due to symmetry, $\Delta CA_{j,t} = -\lambda_1$ holds for the foreign country at the same time. Moreover, in absolute terms, the current account surplus for the home country has to be equal to the current account deficit for the foreign country in equilibrium. Since CA is expressed as a ratio to GDP, as it is standard practice in the literature, to ensure that the world market is in equilibrium, the marginal effect of $\Delta(X_{i,t} - \bar{X}_{i,t})$ on $CA_{i,t}$ must be half as that on $CA_{j,t}$. That is, the marginal effect will be smaller for the larger economy, and vice versa. Without $Y_{i,t}$ in the model, the estimated effect will be somewhere between the actual effects of the two countries, and the error will depend on the relative size of the two economies. The inclusion of $Y_{i,t}$ in (11) provides a solution to this problem and should hence lead to a more accurate estimation of the effect of $(X_{i,t} - \bar{X}_{i,t})$ on $CA_{i,t}$.[5]

Another way to motivate the inclusion of $Y_{i,t}$ in the open economy part of the above equations is that the larger the home country is relative to ROW, the smaller should be the influence of foreign factors on the home country.

At this stage, some remarks on our saving and investment equations are in order. According to equation (1), we could also specify the saving equation as

$$S_{i,t} = \alpha_0 + \alpha_1(1-\theta_{i,t})X_{i,t} + \alpha_2\theta_{i,t}Y_{i,t}(X_{i,t} - \bar{X}_{i,t}) + c_i + \tau_t + u_{i,t}. \tag{15}$$

Yet, we do not opt for this specification because, in the case of a completely open economy, this specification restricts the domestic factors and their foreign

[5] There is a reason why we measure the size of the home economy relative to the world average, but not the average of ROW. Consider the two-country example in the text. If we use the average size of ROW, for the small country, its relative size will be equal to 2 and that of the bigger country will be equal to 1/2, and as a result, the marginal effect of the home country will be a quarter of that of the foreign country, instead of just half of it.

counterparts to have the same (but opposite) effects on saving. In contrast to external balances, such symmetry is not necessarily warranted for saving because the world's savings need not sum to a constant. For instance, greater economic uncertainty in the home country may dampen consumption and thus raise domestic saving, but it may not have the opposite (i.e. negative) effect or any effect on foreign saving. Accordingly, equation (8) retains the idea of equation (1), but it is more flexible at the same time. The same argument applies to the investment function. However, for comparison, we will also estimate equation (15).

Furthermore, even though symmetry on saving and investment is not a must, we still include the inverse measure of the relative economic size ($Y_{i,t}$) as an interaction term in the open economy part of the saving and investment equations. This is because, again, the larger the home country relative to ROW, the smaller the influence of foreign factors on the home country.

We refer to equations (8) to (11) as “semi-structural equations” as they embody the national income identity as well as various restrictions in association with closed and open economies.[6] They provide a direct starting point for the specification of our empirical analyses, which we shall discuss now.

The first issue is related to the fact that we use a panel data set, which allows us to include both country and year fixed effects. Although Gruber and Kamin (2007) recommend not to include country fixed effects because doing that would remove much of the cross-country differences that one seeks to explain, we shall estimate alternative models with and without both time and country specific effects. This will reveal how sensitive our regressions are in this respect. If the fixed effects prove to be statistically significant, excluding them may result in omitted variable bias. So that in this case, it is vital to compare the OLS and fixed effects estimates.

The second specification issue is due to the slowly evolving nature of demography. Relating to the life cycle theory, we seek to explain medium to long run patterns of saving, investment, trade and current account balances. One of the main empirical challenges is therefore to control for short run business cycle effects on these explained variables. We do so using three means. First, we will incorporate a control variable for the business cycles (for details, see next section). Second, we use

[6] They are not *fully* structural equations because, even though they are loosely based on life cycle models and inter-temporal macroeconomic models, they are not formally derived from utility maximizing models. (We leave this exercise for another paper.)

5-year average data (as in Chinn and Prasad, 2003; and Gruber and Kamin, 2007) instead of annual data. Data are averaged for, e.g., 1980–84, 1985–89 etc. Third, we include period fixed effects that will capture any world business cycle.

3.2 Explanatory variables

As mentioned above, in our context, the growth literature and the international macroeconomics literature focus on different sets of explanatory variables. In general, the former works mostly with a closed economy setting and therefore emphasize factors that are important in determining saving behaviour (and to a much less extent for investment) such as demography. On the contrary, the latter by nature works with an open economy setting and thereby emphasizes factors that are important in determining the flows of capitals across countries like institutions. We try to build on both literatures.

For ease of discussion, we group the potential variables for the set *X* into three categories. Note that while we have experimented with all the following variables, a few of them do not enter our final models for various reasons to be explained.

1. Factors pertaining to risks (X1):
    - financial development (transformed measure, detail later);
    - economic stability (inflation);
    - institutional quality (political risk index); and
    - political stability (political risk index).
2. Factors pertaining to average returns (X2):
    - business cycle (multiple measures, detail later); and
    - human capital (average years of schooling).
3. Factors pertaining to life cycle consumption smoothing (X3):
    - old-age dependency rate (transformed measure, detail later);
    - youth dependency rate (transformed measure, detail later);
    - life expectancy (direct measure); and
    - income (direct measure).

Factors X1 and X2 are included in the model because the levels of saving and investment are determined by risk-adjusted returns.[7] The effect of financial development on saving and investment rates could be positive or negative. On the one hand, a deeper financial market will provide more outlets for savings and for managing risks, and thus will stimulate saving and investment. On the other hand, if financial development increases the real rate of return on financial savings, households that save for specific targets may actually reduce their saving rates. Moreover, if households were initially constrained in terms of liquidity and if a more developed financial market can ease their liquidity constraints, they may increase current consumption and reduce savings. In other words, the effect of financial development on saving will be conditional on how tight the initial liquidity constraints are. Moreover, we include inflation as a measure of economic stability.[8]

National savings can be divided into private and public savings. We leave the determinants of public savings for a separate paper, as this would involve a very different set of issues. However, our empirical approach does not rule out the possibility that public savings may respond to the determinants of private savings. Private savings can be further divided into household savings and company savings. Since company saving is typically small compared to the other sources of savings, we do not consider its determinants here. The main theoretical foundation of the determinants of private saving that we refer to is the Modigliani life cycle hypothesis of consumption. The inclusion of a number of demographic variables in X3 is a direct reflection of this hypothesis. Moreover, if initial income is at a subsistence level or there are liquidity constraints, a rise in income will also increase saving rates.

4. Data

[7] We do not include the real interest rate because it is a price that, under certain circumstances, may adjust in response to excessive demand for, or supply of, capital until investment equates saving. Therefore, including the real interest rate will lead to underestimation of the effects of the "deep" determinants of saving and investment.

[8] The depth of financial markets determines the availability of suitable investment vehicles. Institutional quality determines the risks faced by investors (e.g. the protection of property right, the regulation of financial institutions). This means that both factors can influence saving and investment. In fact, Levine et al. (2000) find that legal and regulatory systems strongly affect financial intermediaries. This suggests that measures of financial development and institution quality should enter the model individually as well as in interaction, as in Chinn and Ito (2007). At a later stage, we shall hence also incorporate direct measures of political stability and institutional quality.

Most of the aforementioned variables are measured according to standard practice in the related empirical literature that draws on cross-country panel data. Yet, a few of our variables deserve some discussion.

Openness is a key variable in this paper. Our first measure is based on the financial openness index constructed by Chinn and Ito (2007), which is the first principle component of the binary variables on capital controls recorded on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions. The Chinn-Ito index, however, is not bounded between 0 and 1. In fact, it has negative as well as positive values. We transform it into a series between 0 and 1:

$$CI_{i,t} = \frac{cii_{i,t} - \min\{cii_{j,t}\}}{\max\{cii_{j,t}\} - \min\{cii_{j,t}\}};\ j = 1, 2 ... N \tag{16}$$

where *CI* is our openness measure as corresponding to θ in previous equations, *cii* is the original Chinn-Ito index, and *N* is the total number of countries.

Openness commands a central role in our model specification. Since there is no definite measure of openness, it is important to examine the robustness of our empirical findings with respect to openness measures. An alternative measure is the total assets and liabilities to GDP ratio. Since we aim to measure financial openness, we use the sum rather than the net of assets and liabilities. To this end, we use the data from the External Wealth of Nations (EWN) Mark II dataset developed by Lane and Milesi-Ferretti (2007). While total assets and liabilities to GDP ratio is bounded below at zero, it is not bounded above; therefore, we need to do some transformations. Using a transformation like (16) confronts a problem that some small countries that function as offshore financial centres are of extraordinarily large asset plus liability to GDP ratios and thus make all other countries look as if they were almost completely closed. To circumvent this problem, we set the transformation process as:

$$EWN_{i,t} = \begin{cases} \dfrac{TAL_{i,t} - \min\{TAL_{j,t}\}}{3 - \min\{TAL_{j,t}\}} & \text{if } TAL < 3 \\ 1 & \text{if } TAL \geq 3 \end{cases} \quad ;\ j = 1, 2 ... N \tag{17}$$

where *EWN* is our second openness measure (i.e. a second empirical representation of θ), *TAL* is the total asset and liability to GDP ratio. That is, we assume countries of *TAL* equal to three or above are completely open. The threshold of three is chosen because countries reach this value are typically of the highest Chinn-Ito index values as well. However, this does not render the *EWN* measure to be very similar to the *CI* measure. In fact, as shown below, the two measures have very moderate correlation.

The usual proxies for financial development or activity rely on money and credit volumes.[9] However, they suffer from a number of shortcomings that cast doubt on their usefulness in cross-country and inter-temporal comparisons. We therefore refer to a new multi-indicator measurement of financial activity that captures not only the degree of monetization or financial intermediation, but – in addition – the share of resources a society devotes to run its financial system. In particular, our measurement approach rests on the assumption that the following four indicators, which are individually plagued with a host of validity problems, can jointly be transformed to result in a reasonably reliable and valid measure for the intended notion of financial activity:

- the share of the labour force employed in the financial system;
- the number of banks and branches per capita;
- the share of the financial system in GDP; and
- the traditional measure M2/GDP.

The common variance of the four indicators is identified by means of principal component analysis. The resulting encompassing indicator comprises more information and can hence be assumed to deliver a better overall representation of financial activity. Moreover, it stands for a resource based concept of financial development. This notion of financial development is thus different from the common notion of financial depth; it signifies a real rather than a monetary phenomenon. Practically, to prepare the raw data, the indicator variables were screened for obvious errors and incompatibilities. Then, operational rules were formulated on how to treat missing values. Finally, the data for 90 countries and nine points in time (1960, 1965, ...2000) were pooled into a panel of $N = 810$, and the first principal component was extracted. The first component already accounts for 75% of total variance, and all communalities (i.e. the bi-variate correlations r between principal component and indicators) are .69 or higher, which clearly implies a one-dimensional data space.

[9] For measures of financial depth/development, both Gruber and Kamin (2007) and Chinn and Ito (2007) use the ratio of private credit to GDP, expressed as a deviation from its GDP-weighted sample means, as a proxy. But Chinn and Ito also experiment more composite measures. Legg et al. (2007) use annual stock market turnover as a proportion of share market capitalization as a proxy for financial depth.

Accordingly, in what follows, we shall take the factor values of the first component as our numerical estimates for financial development. The resulting measure of financial development is denoted as *FINDEV4*.[10]

For institutional quality and political stability (combined), we use the political risk index (*RISK*) constructed by International Country Risk Guide. The index has 12 sub-indexes that cover bureaucracy quality, corruption, democratic accountability, ethnic tensions, internal and external conflicts, government stability, investment profile, law and order, military and religion intervention in politics, and socioeconomic conditions.[11] A larger value of the index implies better institutional quality.

For business cycles, we use two control variables. The first one is the period fixed effects, and the second one is the lagged value of the relative price of investment goods. We have also experimented with other variables including the output gap and the capital utilization rate. However, they do not perform as well as the relative price of investment goods in terms of the goodness-of-fit of the models. For the benefit of parsimony, we include only the relative price of investment goods.

The typical definitions of youth- and old-age dependency rates used in previous studies are, respectively, the population aged 0–14 and the population aged 65+ as a ratio of the population aged 15–64. The latter is used as a proxy of the labour force. However, not every one aged 15–64 is economically active. To correct for this, we express the youth and old-age population as a ratio of the economically active population aged 15–64, which we compute by multiplying the population size of this group with the age group's labour participation rate.[12]

We use 5 period data of 5-year average each, starting from 1980 till 2004 (i.e. 1980–1984, 1985–1989…2000–2004). The use of 5-year averages is to smooth out short-term cyclical fluctuations of the variables. As in most panel regressions, there is trade-off between the number of variables to be included and the period and country coverage. To ease the comparison of results across different models, we restrict our sample to 74 countries (with the total number of observations for the unbalanced

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[10] For a comparable approach to measure financial development, see Graff (2005).

[11] We have also tried to use a few sub-indexes that are particularly relevant for our study, such as bureaucracy quality, corruption, government stability. However, this does not add much to the model because these sub-indexes are highly correlated.

[12] LZZ incorporate labour participation rates of this age group as a stand-alone explanatory variable in the regression.

panel equal to 365) for the saving, investment and trade balance equations. However, due to the unavailability of data, the country coverage for the current account equation reduces to 43 (with a total number of observations equal to 205).

The definitions and data sources of the variables are summarized in Table 1 and the summary statistics of the variables are provided in Table 2. In Table 2, the suffix *_CI* in *Y_CI* and *OLD_CI* etc. is used to indicate that both the relative size of the economy (i.e. Y) and the foreign variable (i.e. $\bar{X}$) are computed using *CI* as the openness measure. Since *CI* is a measure of openness and *Y_CI* an inverse measure of the relative size of the home country, *CI*Y_CI* can be interpreted as a measure of the effective openness of the home country. That is, for a given degree of financial openness, smaller countries will appear to be more open to international influence than large countries. Similar definitions and interpretations apply to *EWN*.

The mean and median values of *CI* and *EWN* are comparable at around 0.5 and 0.4 respectively, indicating that most countries are of a medium level of openness. Although the mean and median of *Y_CI* are substantially larger than those of *Y_EWN*, the differences become much smaller when it comes to *CI*Y_CI* and *EWN*Y_EWN*.

Table 3 shows the correlation between the variables. It can be seen that *CI* and *EWN* have a correlation of 0.44 only. However, since the correlation between *Y_CI* and *Y_EWN* is much higher at 0.96, that between *CI*Y_CI* and *EWN*Y_EWN* lies somewhere in between at 0.73. The moderately high level of correlation between the two measures of effective openness means that the estimations should not be too sensitive to the choice of openness measure.

4. Empirical Results

Table 4 reports the regression results for our national savings equation. In regression S1, we only include three demographic variables: the old-age population to labour force dependency rate (*OLD*); the youth to labour force dependency rate (*YOUTH*); and log life expectancy at birth (*LLE*). Only period fixed effects are included in the estimation.[13] All three variables are highly significant. The negative signs of the two

[13] We have also experimented with estimating the model with both period and country fixed effects. The result is that both *YOUTH* and *LLE* become highly insignificant and of much smaller coefficients. This indicates that both variables do not change much over the periods and so the country dummies have picked up most of the cross country variations in these variables. Thereby, following the common practice in the literature, we only include period fixed effects. Furthermore, tests of redundant fixed effects using *F*-test and Chi-square test return that the period fixed effects are significant at any

dependency rates are consistent with the predication of the life cycle hypothesis that people tend to borrow at young ages; save at middle, working ages; and dissave at old ages. The positive sign of life expectancy is also consistent with the theory that people will increase savings at the face of greater longevity (but it may also pick up the effect of income, see below). These results are similar to that of LZZ. Admittedly, both the life cycle hypothesis and the longevity risk argument are best applied to describe individual behaviour and therefore better suit to explain private savings than national savings. Our findings indicate that either the demographic effect on national savings is dominated by that on private savings, or public savings respond to demographic changes in a similar way as private savings. The latter scenario is not inconceivable because government tax revenue could rise with the size of the middle-age working population. Whether private versus public savings respond differently to demographic change is an interesting issue of its own, and we intend to examine it in the future.

In regression S2, we include log real per capita income (*LGDPPC*). The lagged value of the variable is used in order to mitigate reverse causality.[14] In general, we use current values for stock variables or when no reverse causality is expected, and lagged values for flow variables. The inclusion of per capita income has some effects on the magnitude of the coefficients of the two dependency rates, but not their signs and significance. However, it renders life expectancy a negative sign and insignificant. This is due to the fact that life expectancy and income are highly positively correlated.[15] Therefore, it is not a surprise that the coefficient of real income per capita is positive and highly significant. The positive sign of income can also be interpreted as an evidence of liquidity constraint.

In regression S3, we add two other explanatory variables, the lagged growth rate of per capita income (*GROWTHPC*) and log average years of schooling (*LSCHOOL*). Both variables have a positive sign and are highly significant. The results indicate that countries with a higher growth rate and/or a higher stock of human capital tend to save more. Note that the coefficient for *LLE* changes somewhat compared to regression S2. This is probably because *LLE* and *LSCHOOL* are highly correlated (correlation = 0.79).

standard level. Similar results are obtained for other regressions. As a result, we prefer the period fixed effects models to the OLS models.

[14] This is also in line with the specification that LZZ derive from a theoretical overlapping generation model.

[15] The correlation coefficient of *LLE* and *LGDPPC*(-1) is equal to 0.83.

We further add three more control variables in regression S4, including measures of financial development (*FINDEV4*), institution quality (*RISK*), and business cycle (*RPI*).[16] Both *FINDEV4* and *RISK* are of the expected signs that better financial markets and institutions would stimulate domestic saving, albeit both variables are not significant at standard levels. *RPI*, on the other hand, is highly significant, indicating that the period fixed effects alone are not sufficient to account for business cycle effects. With the additional control variables, *LLE* now becomes highly significant. The results for other variables largely remain intact.

The results of S4 indicate that changes in age structure could have a large effect on the saving rate. Other things being equal, an increase in old age dependency rate by one standard deviation (0.097) will reduce the saving rate by 5.0 percentage points, almost one-third of its mean value (15.2 percent). An increase in the youth dependency rate by one standard deviation (0.38) has a smaller effect on the saving rate of 3.0 percentage points. The large effect of the old-age dependency rate on the saving rate thus suggests that dissaving is an important channel through which population aging affects the macroeconomy. We use S4 as our benchmark closed economy model.

Regression S5 is an open economy version of S4 in the spirit of equation (9), using *CI* as the openness measure. We also add the effective openness, *CI*Y_CI*, as a control variable to avoid the open economy variables from picking up their effect via the interaction term. Three interesting results stand out. Firstly, the open economy variables, with the exception of *LSCHOOL* and *RPI*(-1), have the same signs as their domestic economy counterparts. This means that the foreign variable (e.g. *OLD_CI*) has the opposite effect on the domestic saving rate as its domestic counterpart (i.e. *OLD*). A possible explanation is as follows. For instance, if a higher domestic old-age dependency rate will reduce domestic savings, then a higher foreign old-age dependency rate should also reduce foreign savings. This could raise the world interest rates relative to the domestic rate, and thus stimulate domestic savings (and capital outflow). Secondly, only about half of the nine open economy variables are individually significant at the 10 percent level and the inclusion of open economy variables raises the R^2 of the model slightly from 0.68 to 0.71. Thirdly, the marginal

[16] We have also tried to use lagged inflation rates as measures of economic stability. However, the availability of data means that their inclusion will cut our sample size quite substantially by over 25 percent. Apart from this, the variable also is not significant individually and does not improve the overall explanatory power of the model. Therefore, we do not include it in the final model.

effects of foreign variables in general are much smaller than their domestic counterparts. For the ease of comparison, we also show in the table the values of the coefficients multiplying with the mean value of *CI*Y_CI* and *EWN*Y_EWN*, respectively. For instance, evaluating at the mean value of *CI*Y_CI* (3.82), the marginal effect of an increase in domestic old-age dependency rate is 3.7 times that of an increase in foreign old-age dependency rate.[17] The second and third results suggest that, as expected, while foreign economies matter, domestic factors are much more important than foreign factors in determining domestic savings.[18]

Regression S6 is a replication of S5, but with *EWN* instead of *CI* as the openness measure. The foreign variables are substituted accordingly. Besides *LSCHOOL* and *RPI*(-1), now *LLE*, *GROWTHPC*(-1) and *FINDEV4* also have the opposite signs as their open economy counterparts. Amongst all the variables, three open economy variables (corresponding to *LLE*, *GROWTHPC*(-1), and *FINDEV4*) change signs between the two regressions, underpinning the challenges in measuring openness. However, other than this, the major findings of S5 largely remain intact. In particular, the explanatory power of the model remains at the level of 0.71, and the effect of foreign variables remains small compared to their domestic counterparts.

Table 5 reports the regression results for our investment equation. Instead of discussing the results of various "building up" specifications, we focus on our benchmark closed economy regression – I4. Both dependency rates have a negative sign but only the old-age dependency rate is significant. Compared with the results for savings (S4), it can be seen that the coefficients of both dependency rates are much smaller in the investment model than in the saving models. Also, life expectancy is not significant in this benchmark closed economy investment equation, in contrast to the saving equation. This is probably because private savings are mostly made by individuals and their decisions are more strongly influenced by the stage of life cycle they are at, whereas (real) investment decisions are mostly made by firms, and demographic factors affect this decision making process probably indirectly through their impact on the labour supply. The other explanatory variables have the same signs as in S4. In particular, *LSHOOL*, *FINDEV4* and *RISK* are of the expected signs

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[17] The marginal effect of domestic change = 41.22+3.99*3.82=56.45, the marginal effect of foreign change = 3.99*3.82=15.22, so the ratio = 3.71.

[18] This conclusion is also verified by the fact that if we include only the foreign variables (i.e. *OLD_CI* etc.) without interacting them with *CI*Y_CI* , five out of nine variables are individually significant at the 10 percent or lower level, but the R^2 of the model drops to 0.11 only.

in that a larger human capital stock can raise productivity, and a more developed financial market and better institutional quality can reduce risk exposure. Amongst all the explanatory variables, the coefficients of *FINDEV4* and *RISK* are about twice as large in the investment equation as in the saving equation. This indicates that real investment is more sensitive to the domestic development of financial markets and institutions than savings. The sign of *RPI*(-1) is also in line with expectations in that a higher price of investment goods in the last period may indicate an economic boom and higher investment; as a result, investment is likely to come down in the current period.

Regressions I5 and I6 are the open economy version of the investment equation. Amongst all the variables, only one open economy variable (corresponding to *LLE*) changes its sign between the two regressions. Since the results of the two regressions are very similar, we focus on I5 only. One unexpected result is that the marginal effect of *LSCHOOL* on investment now becomes negative, albeit not schooling variables are significant at standard levels. In other aspects, the effect of including open economy variables in the investment equation is very similar to that in the saving equation. Firstly, about half of the open economy variables have the same sign as their domestic counterparts, reiterating the point that the symmetry argument does not necessarily hold for the investment and saving equations. Secondly, adding the open economy variables only improves the explanatory power of the model modestly, with the R^2 of I5 (0.69) being slightly higher than that of I4 (0.65). The result indicates that domestic real investment is still largely determined by domestic factors. The results that both domestic saving and investment are largely determined by domestic factors actually echo the Feldstein and Horioka puzzle.[19]

Table 6 reports the results for the alternative specifications for the saving and investment equations as depicted in equation (15). Recall that (15) follows the initial equation (2) more strictly but is also more restrictive than equation (9). The results for S7 should be compared with those of S5, S8 to S6, and so forth. In the alternative regressions, we add $1-CI$ or $1-EWN$ as additional control variables, as they are used as interaction terms there. In S7, the coefficient of, say, $(1-CI)*OLD$ indicates

[19] In a seminal paper, Feldstein and Horioka (1980) find a saving retention coefficient of 0.89 for 16 OECD countries for the period 1960-74, indicating that even for the presumably open OECD countries, the vast majority of domestic investment was financed by domestic saving. In a later update, Obstfeld and Rogoff (2000) find that the retention coefficient has come down to 0.60 for the period 1990-1997. Also, see Fouquau, Hurlin and Rabaud (2008) on a recent re-examination of this puzzle.

the marginal effect of the old-age dependency rate on the saving rate conditional on the "closedness" of the home country, while keeping other variables, including the difference in old-age dependency rate of the home country and ROW, constant. On the other hand, the coefficient of $CI*Y\_CI*(OLD-OLD\_CI)$ can be interpreted as the marginal effect of the difference in the old-age dependency rate between the home country and ROW conditional on the effective openness of the home country, while keeping other variables, including the home old-age dependency rate, constant. Instead of discussing the difference in individual variables, we only focus on the explanatory power of the models. It can be seen that the R^2 drops substantially from 0.71 in S5 to 0.62 in S7, and from 0.71 to 0.65 between S6 and S8. A similar drop in the R^2 for the investment equation is witnessed when moving from I5 and I6 to I7 and I8, respectively. The findings therefore give support to the use of the more flexible specifications as suggested by equation (9).

Table 7 reports the regression results for saving and investment using conventional specifications. In particular, no interaction term of the effective openness is used. Moreover, the foreign variables (e.g. *OLD_NIL* etc.) are computed based on equation (14) that does not make use of any openness measure – that is why they are denoted with a suffix *_NIL*. We add *CI* and *Y_CI* as control variables as well. The regression S9 and I9 are useful in showing how much difference the semi-structural equations can make to the estimation results. Comparing S9 with S5 and S6, and I9 with I5 and I6, we can see that the R^2 of the models based on the conventional and our specifications are very similar. Moreover, for the domestic variables, the results based on the two specifications are also largely comparable in terms of both signs and magnitude. However, the differences in the results for the foreign variables are very large. In S9 and I9, a change in a foreign variable has much greater effect on the domestic savings and investment than the same change in the domestic variable. More importantly, the magnitude of the marginal effects of the foreign variable is implausibly large. In S10 and I10, we use a specification fairly close to that of S6 and I6, except without the interaction with the effective openness variable. While the marginal effects of the foreign variables have reduced substantially, they remain very large. Furthermore, even if we replace *OLD_NIL* with *OLD_CI* (or *OLD_EWN*) and so forth and include *CI*Y_CI* (or *EWN*Y_EWN*) as a control variable (but not as an interacting term) in S10 and I10, the magnitude of the marginal effect of the foreign variables remain too large to be plausible. Therefore, we can conclude that the semi-structural equation specifications do provide a more proper specification for national savings and investment when it comes to an open economy.

Table 8 reports the regression results for the trade balance (*TB*) equation. Regressions TB1 and TB2 are based on our two different measures of openness. Both regressions show that higher old-age and youth dependency rates in the home country relative to ROW would lead to a lower trade balance, but the magnitude of the effects is somewhat higher in TB2, especially for the old-age dependency rate. Since higher dependency rates lower both saving and investment rates, the effect on the trade balance (and the current account balance) depends on the relative elasticities of saving and investment. The previous results show that saving seems to respond more strongly than investment to demographic change. Therefore, it is consistent to observe that higher dependency rates at home relative to ROW will lower the trade balance. This finding is also in line with those of Chin and Ito (2007) and Gruber and Kamin (2007). Amongst the remaining variables, four (corresponding to *LLE*, *LGDPPC*, *LSCHOOL* and *RPI*(-1)) have the same signs across the two regressions. There are no clear-cut theoretical predictions on their expected signs. However, the positive sign of *LGDPPC* is consistent with the findings in Chin and Ito (2007) and Gruber and Kamin (2007). The last three variables (corresponding to *GROWTHPC*(-1), *FINDEV4*, *RISK*) change their signs across the two regressions. From a theoretical perspective, and also confirmed in the other two studies, better financial development and institutions are likely to attract foreign capital. In this aspect, the results TB2 are preferred to those of TB1. Lastly, In contrast to the saving and investment equations, there are also substantial differences in the explanatory power of the two regressions, with the R^2 of TB1 (0.32) substantially higher than that of TB2 (0.23). Since the only difference between the two regressions is the measure of openness, the differences in the results, once again, highlight the challenges in measuring openness.

Regression TB3 is the conventional specification where the foreign variables are computed based on equation (14), i.e. no openness measure is used in the computation of *OLD_NIL* etc. Again, *CI* and *Y_CI* are added as control variables. For the variables that TB1 and TB2 agree on their signs, TB3 also gives the same sign. Therefore, in terms of the “correctness” of coefficient signs, there is no clear indication that the semi-structural equations do a better job than the conventional specification. In terms of coefficient magnitude, the marginal effects registered in

TB3 are generally larger, especially for the demographic variables. However, the differences are far from the scale witnessed in the saving and investment equations. The explanatory power of TB3 (R^2 = 0.39) is noticeably higher than that of TB1 and TB2. This may cast doubt on the merit or validity of our semi-structural equation approach. However, we find that the explanatory power of TB1 and TB2 relative to that of TB3 change with samples. For instance, the results shown in Table 8 (TB4 – TB6) are based on a sub-sample of countries with current account balance (CA) data. It can be seen that the results of TB4 and TB5 are much more agreeable with each other. Moreover, the R^2 of TB4 (0.56) and TB5 (0.43) are now respectively higher than and comparable to that of TB6 (0.42).

Table 9 reports the results for the current account (*CA*) equation. Due to the limitation in data availability, the sample size is reduced to 43 countries with 205 observations.[20] The two regressions, CA1 and CA2, show quite a lot of disagreement. For instance, while CA1 shows that the old-age dependency rate has a statistically significant effect on the current account balance, CA2 shows otherwise. The opposite is true for the youth dependency rate. The finding of a negative sign with the old-age dependency rate is consistent with the findings from most previous studies, but the positive sign with the youth dependency rate is not. The two regressions also return different signs for three variables (corresponding to *LGDPPC*(-1), *LSCHOOL*, and *FINDEV4*). CA2 returns a right sign for *FINDEV4*. However, both regressions yield a wrong sign for *RISK*. CA3 is the conventional specification. For variables that CA1 and CA2 are agreeable on their signs, CA3 also returns the same sign. There is no clear pattern which regression gives systemically larger or smaller estimates for the marginal effects. In terms of explanatory power, the R^2 of CA3 is comparable to that of CA1 but smaller than that of CA2.

Overall, in contrast to the case of saving and investment, there is not clear evidence that the semi-structural equation specifications outperform the conventional specifications when it comes to modelling trade or current account balance.

[20] Different from saving, investment and trade balance, the data for current account balance is drawn not from the Penn World Table 6.2 (PWT), but from the World Development Indicators. This is because we find that the current account balance data drawn from the PWT, in contrast to the expectations, have a very low correlation with the trade balance data.

5. Conclusion

In this paper, we examine the impact of demographic factors on saving, investment, and the external balance. The paper builds on two strands of related literature on the one hand, and makes its own contributions on the other hand. In particular, the paper derives a number of semi-structural equations from national accounting principle. As a result, these equations embody closed, partially open and completely open economies as special cases. We have paid particular attention to the roles of openness and relative economic size in specifying these equations, which are arguably more properly specified than those used in previous studies. In accordance, the semi-structural equations also give the measurement of openness and relative economic size a crucial role in the regression model specifications. Since how to measure openness remains a contestable issue, the theoretical rigorousness of the semi-structural equations may not be easily preserved when the theory is put into practice.

In the current paper, we apply the semi-structural equations to a large panel dataset of 74 countries for 25 years, from 1980 to 2004. Two openness measures are used, one is based on the IMF's data on capital account restrictions, and the other is based on total assets and liabilities to GDP ratio. The first is largely a qualitative measure and the latter a quantitative measure. In our dataset, the two openness measures have a correlation of merely 0.44. However, the relative economic sizes that are calculated based on respectively each of these two openness measures have a high correlation of 0.96, and that of the effective openness equal to 0.77. Although it is not shown in the correlation table (Table 3), for most foreign variables, the two versions computed using the two openness measures are highly correlated.[21] Therefore, it is not a surprise to find that the empirical results based on the two measures have a lot in common, albeit differences do exist.

We find statistically significant effects of demographic factors for all four dependent variables. Regarding the other results, by and large they are in agreement with most previous studies. Yet, we find that for the saving and investment equations, the estimated results of the marginal effects of foreign variables are much more plausible under the semi-structural equation specification than under the conventional specification. On the other hand, for the trade balance and current account balance equations, the differences between the estimation results based on the two

[21] Two exceptions are *RISK* and *RPI*.

specifications are much smaller (but still exist), and there is not clear evidence which specification performs better.

Overall, we think that the semi-structural equations do provide a useful framework to consider how regression models should be specified in an open economy context. However, more needs to be done to establish its merit over the conventional specifications in actual empirical applications. Further improvement of the empirical models could come from using more adequate measures of openness. As future extension, we would hence like to experiment with alternative openness measures, e.g. based on trade to GDP ratio, and a composite measure that combines trade openness, *CI* and *EWN*.

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Table 1 Data definitions and sources

Variable	Definition	Source
SAVING	National saving to GDP ratio (in %)	Penn World Tables 6.2 (PWT)
INVESTMENT	Real investment to GDP ratio (in %)	PWT
TB	Trade balance to GDP ratio (in %)	PWT
CA	Current account balance to GDP ratio (in %)	World Development Indicators (WDI) database
CI	Chin-Ito openness index, standardized	Chinn and Ito (2007)
EWN	Asset plus liability to GDP ratio, standardized	Lane and Milesi-Ferretti (2007)
Y	ROW GDP to home GDP ratio	PWT
OLD	Population aged 65+ to working population aged 15-64	WDI
YOUTH	Population aged 0-14 to working population aged 15-64	WDI
LLE	Log life expectancy	WDI
LGDPPC	Log income per capita	PWT
GROWTHPC	Growth rate of income per capita	PWT
LSCHOOL	Log average years of schooling	Barro and Lee (2001)
FINDEV4	The first principle components of four financial development indicators	Graff (2005)
RISK	Composite political risk index	International Country Risk Guide
RPI	Relative price of investment goods	PWT

Table 2 Summary statistics

	SAVING	INVESTMENT	TB	CA	CI	EWN	Y_CI	Y_EWN	CI*Y_CI	EWN*Y_EWN	OLD	YOUTH	LLE	LGDPPC	GROWTHPC	LSCHOOL	FINDEV4	RISK	RPI
Mean	15.21	17.37	-2.16	-2.18	0.49	0.44	10.63	6.49	3.82	3.19	0.17	0.86	4.19	8.70	1.47	1.67	0.43	64.39	1.56
Median	15.50	16.78	-1.48	-2.17	0.39	0.38	3.12	1.85	1.45	0.93	0.12	0.89	4.25	8.71	1.50	1.75	0.11	64.23	1.30
Maximum	56.21	57.29	22.85	14.08	1.00	1.00	108.85	75.35	40.19	45.86	0.46	2.21	4.40	10.46	13.26	2.49	5.14	94.08	5.91
Minimum	-21.48	3.64	-46.26	-22.07	0.00	0.06	0.04	0.03	0.00	0.00	0.05	0.29	3.63	5.94	-8.48	-0.62	-1.14	28.08	0.78
Std. Dev.	12.98	8.39	7.56	4.59	0.35	0.25	16.13	9.93	5.90	5.74	0.10	0.38	0.17	1.07	2.64	0.55	1.12	16.17	0.77
# Obs.	365	365	365	205	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365

Table 3 Correlations

	SAVING	INVESTMENT	CA	TB	CI	EWN	Y_CI	Y_EWN	CI*Y_CI	EWN*Y_EWN	OLD	YOUTH	LLE	LGDPPC	GROWTHPC	LSCHOOL	FINDEV4	RISK	RPI
SAVING	1.00	0.83	0.46	0.80	0.38	0.21	-0.51	-0.53	-0.41	-0.38	0.52	-0.60	0.58	0.71	0.27	0.65	0.56	0.58	-0.75
INVESTMENT	0.83	1.00	0.32	0.33	0.39	0.13	-0.47	-0.49	-0.33	-0.35	0.58	-0.52	0.65	0.74	0.25	0.66	0.62	0.60	-0.79
CA	0.46	0.32	1.00	0.43	0.28	0.15	-0.31	-0.27	-0.13	-0.18	0.26	-0.28	0.38	0.45	0.40	0.41	0.35	0.39	-0.27
TB	0.80	0.33	0.43	1.00	0.22	0.21	-0.36	-0.38	-0.34	-0.27	0.25	-0.45	0.28	0.42	0.19	0.41	0.29	0.35	-0.43
CI	0.38	0.39	0.28	0.22	1.00	0.44	-0.25	-0.19	0.12	-0.13	0.53	-0.57	0.45	0.56	0.18	0.52	0.58	0.62	-0.38
EWN	0.21	0.13	0.15	0.21	0.44	1.00	0.10	0.15	0.15	0.35	0.36	-0.31	0.25	0.31	0.04	0.35	0.54	0.40	-0.23
Y_CI	-0.51	-0.47	-0.31	-0.36	-0.25	0.10	1.00	0.96	0.77	0.85	-0.47	0.44	-0.58	-0.58	-0.12	-0.55	-0.46	-0.36	0.42
Y_EWN	-0.53	-0.49	-0.27	-0.38	-0.19	0.15	0.96	1.00	0.81	0.92	-0.48	0.41	-0.60	-0.58	-0.09	-0.52	-0.45	-0.29	0.45
CI*Y_CI	-0.41	-0.33	-0.13	-0.34	0.12	0.15	0.77	0.81	1.00	0.73	-0.33	0.30	-0.38	-0.35	-0.02	-0.35	-0.28	-0.14	0.31
EWN*Y_EWN	-0.38	-0.35	-0.18	-0.27	-0.13	0.35	0.85	0.92	0.73	1.00	-0.37	0.32	-0.47	-0.47	-0.06	-0.36	-0.31	-0.15	0.32
OLD	0.52	0.58	0.26	0.25	0.53	0.36	-0.47	-0.48	-0.33	-0.37	1.00	-0.71	0.70	0.83	0.10	0.68	0.76	0.67	-0.62
YOUTH	-0.60	-0.52	-0.28	-0.45	-0.57	-0.31	0.44	0.41	0.30	0.32	-0.71	1.00	-0.60	-0.70	-0.25	-0.65	-0.67	-0.74	0.58
LLE	0.58	0.65	0.38	0.28	0.45	0.25	-0.58	-0.60	-0.38	-0.47	0.70	-0.60	1.00	0.88	0.21	0.82	0.72	0.69	-0.64
LGDPPC	0.71	0.74	0.45	0.42	0.56	0.31	-0.58	-0.58	-0.35	-0.47	0.83	-0.70	0.88	1.00	0.24	0.84	0.83	0.77	-0.70
GROWTHPC	0.27	0.25	0.40	0.19	0.18	0.04	-0.12	-0.09	-0.02	-0.06	0.10	-0.25	0.21	0.24	1.00	0.19	0.12	0.37	-0.04
LSCHOOL	0.65	0.66	0.41	0.41	0.52	0.35	-0.55	-0.52	-0.35	-0.36	0.68	-0.65	0.82	0.84	0.19	1.00	0.73	0.72	-0.68
FINDEV4	0.56	0.62	0.35	0.29	0.58	0.54	-0.46	-0.45	-0.28	-0.31	0.76	-0.67	0.72	0.83	0.12	0.73	1.00	0.67	-0.62
RISK	0.58	0.60	0.39	0.35	0.62	0.40	-0.36	-0.29	-0.14	-0.15	0.67	-0.74	0.69	0.77	0.37	0.72	0.67	1.00	-0.52
RPI	-0.75	-0.79	-0.27	-0.43	-0.38	-0.23	0.42	0.45	0.31	0.32	-0.62	0.58	-0.64	-0.70	-0.04	-0.68	-0.62	-0.52	1.00

Table 4 Regression results for national saving

	S1		S2		S3		S4		S5			S6		
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coeff.*mean(CI*Y_CI)	Coefficient	Std. Error	Coeff.*mean(EWN*Y_EWN)
C	-87.07	16.98 ***	-48.81	15.17 ***	-24.64	17.16	27.95	17.33	20.69	21.42		34.69	24.84	
OLD	-19.72	8.45 **	-54.62	8.02 ***	-49.66	8.01 ***	-51.13	7.50 ***	-41.22	8.88 ***		-40.70	8.94 ***	
YOUTH	-18.13	2.05 ***	-12.29	1.86 ***	-10.77	1.88 ***	-7.94	1.91 ***	-6.20	2.35 ***		-4.89	2.48 **	
LLE	28.93	4.06 ***	-1.31	4.50	-7.58	4.90	-13.71	4.59 ***	-7.90	5.84		-12.12	6.47 *	
LGDPPC(-1)			10.34	0.96 ***	9.65	1.00 ***	7.04	1.09 ***	5.66	1.36 ***		5.97	1.42 ***	
GROWTHPC(-1)					0.55	0.17 ***	0.54	0.16 ***	0.54	0.20 ***		0.70	0.20 ***	
LSCHOOL					3.04	1.47 **	2.29	1.36 *	-1.06	1.88		-0.45	2.01	
FINDEV4							0.82	0.72	0.82	0.89		1.83	0.91 **	
RISK							0.06	0.05	0.07	0.05		0.05	0.06	
RPI(-1)							-6.21	0.77 ***	-7.67	0.93 ***		-8.78	1.00 ***	
CI*Y_CI*(OLD-OLD_CI)									-3.99	2.29 *	-15.22			
CI*Y_CI*(YOUTH-YOUTH_CI)									-0.66	0.38 *	-2.52			
CI*Y_CI*(LLE-LLE_CI)									-1.06	0.54 **	-4.03			
CI*Y_CI*(LGDPPC(-1)-LGDPPC_CI(-1))									0.19	0.18	0.74			
CI*Y_CI*(GROWTHPC(-1)-GROWTHPC_CI(-1))									0.00	0.03	0.00			
CI*Y_CI*(LSCHOOL-LSCHOOL_CI)									0.25	0.16	0.96			
CI*Y_CI*(FINDEV4-FINDEV4_CI)									0.17	0.18	0.66			
CI*Y_CI*(RISK-RISK_CI)									0.00	0.01	0.01			
CI*Y_CI*(RPI(-1)-RPI_CI(-1))									0.13	0.07 *	0.48			
CI*Y_CI									0.16	0.27	0.00			
EWN*Y_EWN*(OLD-OLD_EWN)												-9.70	3.84 ***	-30.95
EWN*Y_EWN*(YOUTH-YOUTH_EWN)												-1.15	0.55 **	-3.66
EWN*Y_EWN*(LLE-LLE_EWN)												0.83	0.71	2.66
EWN*Y_EWN*(LGDPPC(-1)-LGDPPC_EWN(-1))												0.29	0.24	0.92
EWN*Y_EWN*(GROWTHPC(-1)-GROWTHPC_EWN(-1))												-0.04	0.03	-0.14
EWN*Y_EWN*(LSCHOOL-LSCHOOL_EWN)												0.39	0.24 *	1.26
EWN*Y_EWN*(FINDEV4-FINDEV4_EWN)												-0.39	0.25	-1.24
EWN*Y_EWN*(RISK-RISK_EWN)												0.00	0.01	0.00
EWN*Y_EWN*(RPI(-1)-RPI_EWN(-1))												0.25	0.09 ***	0.79
EWN*Y_EWN												-0.70	0.39 *	0.00
R-squared	0.48		0.61		0.62		0.68		0.71			0.71		
Adjusted R-squared	0.47		0.60		0.61		0.67		0.69			0.69		
# countries	74		74		74		74		74			74		
# obs.	365		365		365		365		365			365		

Note: All estimations include period fixed effects. ***, **, * denote 1%, 5%, and 10% significance level for a two-side test.

Table 5 Regression results for investment

	I1		I2		I3		I4		I5			I6		
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coeff.*mean(CI*Y_CI)	Coefficient	Std. Error	Coeff.*mean(EWN*Y_EWN)
C	-62.00	10.88 ***	-46.68	10.65 ***	-33.27	12.02 ***	6.64	11.78	-2.22	14.44		-1.14	16.37	
OLD	-3.57	5.41	-17.55	5.63	-13.99	5.61 ***	-17.74	5.10 ***	-12.03	5.99 **		-14.96	5.89 ***	
YOUTH	-8.52	1.31 ***	-6.18	1.31	-5.19	1.32 ***	-1.68	1.30	-1.94	1.58		-2.06	1.64	
LLE	20.84	2.60 ***	8.73	3.16	5.11	3.43	1.25	3.12	4.11	3.94		3.66	4.26	
LGDPPC(-1)					3.84	0.70 ***	0.90	0.74	1.25	0.92		1.57	0.94 *	
GROWTHPC(-1)					0.45	0.12 ***	0.41	0.11 ***	0.57	0.13 ***		0.68	0.13 ***	
LSCHOOL					1.28	1.03	0.48	0.92	-0.48	1.27		-0.61	1.33	
FINDEV4							1.63	0.49 ***	0.94	0.60		1.26	0.60 **	
RISK							0.11	0.03 ***	0.06	0.04		0.04	0.04	
RPI(-1)							-4.51	0.52 ***	-5.63	0.63 ***		-5.89	0.66 ***	
CI*Y_CI*(OLD-OLD_CI)									-3.22	1.54 **	-12.28			
CI*Y_CI*(YOUTH-YOUTH_CI)									0.04	0.26	0.16			
CI*Y_CI*(LLE-LLE_CI)									-0.03	0.37	-0.12			
CI*Y_CI*(LGDPPC(-1)-LGDPPC_CI(-1))									-0.09	0.12	-0.35			
CI*Y_CI*(GROWTHPC(-1)-GROWTHPC_CI(-1))									-0.02	0.02	-0.09			
CI*Y_CI*(LSCHOOL-LSCHOOL_CI)									-0.02	0.11	-0.08			
CI*Y_CI*(FINDEV4-FINDEV4_CI)									0.26	0.12 **	0.98			
CI*Y_CI*(RISK-RISK_CI)									0.01	0.01 *	0.03			
CI*Y_CI*(RPI(-1)-RPI_CI(-1))									0.13	0.05 ***	0.48			
CI*Y_CI									-0.30	0.18 *	0.00			
EWN*Y_EWN*(OLD-OLD_EWN)												-5.06	2.53 **	-16.15
EWN*Y_EWN*(YOUTH-YOUTH_EWN)												0.24	0.36	0.78
EWN*Y_EWN*(LLE-LLE_EWN)												0.41	0.47	1.30
EWN*Y_EWN*(LGDPPC(-1)-LGDPPC_EWN(-1))												-0.12	0.16	-0.39
EWN*Y_EWN*(GROWTHPC(-1)-GROWTHPC_EWN(-1))												-0.06	0.02 ***	-0.21
EWN*Y_EWN*(LSCHOOL-LSCHOOL_EWN)												-0.04	0.16	-0.14
EWN*Y_EWN*(FINDEV4-FINDEV4_EWN)												0.18	0.16	0.56
EWN*Y_EWN*(RISK-RISK_EWN)												0.02	0.01 **	0.06
EWN*Y_EWN*(RPI(-1)-RPI_EWN(-1))												0.12	0.06 **	0.40
EWN*Y_EWN												-0.75	0.26 ***	0.00
R-squared	0.49		0.53		0.55		0.65		0.69			0.69		
Adjusted R-squared	0.48		0.52		0.54		0.63		0.66			0.67		
# countries	74		74		74		74		74			74		
# obs.	365		365		365		365		365			365		

Note: Same as Table 4.

Table 6 Regression results for alternative saving and investment equations

	S7			S8			I7			I8		
	Coefficient	Std. Error		Coefficient	Std. Error		Coefficient	Std. Error		Coefficient	Std. Error	
C	24.53	1.05	***	29.25	1.50	***	23.59	0.69	***	24.01	1.00	***
(1-CI)*OLD	-40.74	18.09	**	-36.29	16.07	**	5.20	11.86		-4.97	10.69	
(1-CI)*YOUTH	-2.76	3.26		-5.58	3.55		1.57	2.14		-1.58	2.36	
(1-CI)*LLE	-7.42	8.08		-21.48	9.89	**	3.32	5.30		-1.52	6.58	
(1-CI)*LGDPPC(-1)	4.83	1.89	***	11.55	2.22	***	-0.06	1.24		4.25	1.48	***
(1-CI)*GROWTHPC(-1)	0.29	0.29		1.14	0.31	***	0.45	0.19	**	0.99	0.21	***
(1-CI)*LSCHOOL	2.60	2.77		0.62	3.01		1.98	1.81		0.94	2.00	
(1-CI)*FINDEV4	0.56	2.03		-0.47	1.85		2.23	1.33	*	1.02	1.23	
(1-CI)*RISK	0.11	0.08		-0.11	0.09		0.05	0.05		-0.08	0.06	
(1-CI)*RPI(-1)	-6.99	1.27	***	-11.20	1.41	***	-5.25	0.83	***	-7.45	0.94	***
CI*Y_CI*(OLD-OLD_CI)	-6.21	2.32	***				-4.31	1.52	***			
CI*Y_CI*(YOUTH-YOUTH_CI)	-1.19	0.39	***				-0.29	0.26				
CI*Y_CI*(LLE-LLE_CI)	-1.85	0.53	***				-0.20	0.35				
CI*Y_CI*(LGDPPC(-1)-LGDPPC_CI(-1))	0.23	0.18					-0.17	0.12				
CI*Y_CI*(GROWTHPC(-1)-GROWTHPC_CI(-1))	0.02	0.03					0.00	0.02				
CI*Y_CI*(LSCHOOL-LSCHOOL_CI)	-0.03	0.16					-0.20	0.10	**			
CI*Y_CI*(FINDEV4-FINDEV4_CI)	0.57	0.17	***				0.50	0.11	***			
CI*Y_CI*(RISK-RISK_CI)	0.01	0.01					0.01	0.00	***			
CI*Y_CI*(RPI(-1)-RPI_CI(-1))	-0.07	0.07					-0.01	0.04				
1-CI	-13.11	29.44					-22.73	19.30				
CI*Y_CI	0.44	0.30					-0.22	0.20				
EWN*Y_EWN*(OLD-OLD_EWN)				-14.76	3.73	***				-6.88	2.48	***
EWN*Y_EWN*(YOUTH-YOUTH_EWN)				-1.65	0.52	***				-0.08	0.34	
EWN*Y_EWN*(LLE-LLE_EWN)				1.44	0.65	**				1.03	0.43	**
EWN*Y_EWN*(LGDPPC(-1)-LGDPPC_EWN(-1))				0.11	0.23					-0.34	0.15	**
EWN*Y_EWN*(GROWTHPC(-1)-GROWTHPC_EWN(-1))				-0.06	0.03	*				-0.05	0.02	***
EWN*Y_EWN*(LSCHOOL-LSCHOOL_EWN)				0.04	0.22					-0.31	0.15	**
EWN*Y_EWN*(FINDEV4-FINDEV4_EWN)				-0.25	0.24					0.35	0.16	**
EWN*Y_EWN*(RISK-RISK_EWN)				0.02	0.01	*				0.03	0.01	***
EWN*Y_EWN*(RPI(-1)-RPI_EWN(-1))				-0.14	0.08	*				-0.12	0.05	**
1-EWN				3.13	37.09					-24.10	24.68	
EWN*Y_EWN				-1.38	0.45	***				-0.96	0.30	***
R-squared	0.62			0.65			0.61			0.63		
Adjusted R-squared	0.60			0.63			0.58			0.61		
# countries	74			74			74			74		
# obs.	365			365			365			365		

Note: Same as Table 4.

Table 7 Regression results for conventional saving and investment equations

	S9		I9		S10		I10	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
C	-1027.88	1017.15	-2144.36	674.95 ***	1476.85	481.46 ***	660.78	326.17 **
OLD	-62.50	8.95 ***	-21.41	5.94 ***	-1486.77	496.21 ***	-723.92	336.16 **
YOUTH	-10.01	2.09 ***	-1.54	1.39	-524.52	212.56 ***	-92.41	144.00
LE	-17.54	4.43 ***	-0.04	2.94	-215.36	85.95 ***	-113.83	58.23 **
LGDPPC(-1)	6.95	1.10 ***	0.65	0.73	8.82	7.92	-7.49	5.37
GROWTHPC(-1)	0.37	0.17 **	0.27	0.12 **	0.49	0.23 **	0.22	0.15
LSCHOOL	2.01	1.36	-0.21	0.90	-58.00	85.42	-17.28	57.87
FINDEV4	2.45	0.83 ***	3.10	0.55 ***	138.69	46.01 ***	81.90	31.17 ***
RISK	0.10	0.05 **	0.14	0.03 ***	-0.54	3.80	0.88	2.57
RPI(-1)	-4.95	0.80 ***	-3.05	0.53 ***	-2.60	1.02 ***	-1.07	0.69
CI	-1.80	1.67	-1.27	1.10	-2.07	1.63	-1.20	1.10
Y_CI	-0.05	0.03 *	-0.03	0.02 *	-0.03	0.03	-0.01	0.02
OLD_NIL	-1549.28	556.80 ***	-633.60	369.48 *				
YOUTH_NIL	-756.09	251.85 ***	-266.08	167.12				
LE_NIL	-259.04	89.56 ***	-196.71	59.43 ***				
LGDPPC_NIL(-1)	280.48	111.16 ***	273.12	73.76 ***				
GROWTHPC_NIL(-1)	-28.83	18.36	-30.28	12.18 ***				
LSCHOOL_NIL	-428.65	150.35 ***	-399.62	99.77 ***				
FINDEV4_NIL	168.07	60.88 ***	150.10	40.40 ***				
RISK_NIL	5.66	4.17	8.72	2.77 ***				
RPI_NIL(-1)	498.68	133.53 ***	631.55	88.61 ***				
OLD-OLD_NIL					1423.41	491.51 ***	698.78	332.98 **
YOUTH-YOUTH_NIL					515.81	211.68 **	91.35	143.41
LLE-LLE_NIL					198.11	85.54 **	114.52	57.95 **
LGDPPC-LGDPPC_NIL(-1)					-2.00	7.94	8.06	5.38
GROWTHPC-GROWTHPC_NIL(-1)					0.58	0.28 **	0.12	0.19
LSCHOOL-LSCHOOL_NIL					60.14	85.11	17.14	57.66
FINDEV4-FINDEV4_NIL					-136.77	45.69 ***	-79.67	30.95 ***
RISK-RISK_NIL					0.61	3.78	-0.77	2.56
RPI-RPI_NIL(-1)					-4.71	1.01 ***	-4.71	0.68 ***
R-squared	0.72		0.71		0.74		0.71	
Adjusted R-squared	0.71		0.69		0.72		0.69	
# countries	74		74		74		74	
# obs.	365		365		365		365	

Note: Same as Table 4.

Table 8 Regression results for trade balance

	TB1			TB2			TB3		TB4		TB5		TB6	
	Coefficient	Std. Error	Coeff.*mean(CI*Y_CI)	Coefficient	Std. Error	Coeff.*mean(EWN*Y_EWN)	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
C	-1.37	0.41 ***		-1.76	0.44 ***		8.19	1.50 ***	-0.86	0.49 *	-1.07	0.56 *	11.92	2.27 ***
CI*Y_CI*(OLD-OLD_CI)	-2.65	1.67	-10.11						-9.52	2.62 ***				
CI*Y_CI*(YOUTH-YOUTH_CI)	-1.07	0.27 ***	-4.08						-2.29	0.34 ***				
CI*Y_CI*(LLE-LLE_CI)	-2.16	0.37 ***	-8.24						-0.49	0.49				
CI*Y_CI*(LGDPPC(-1)-LGDPPC_CI(-1))	0.61	0.13 ***	2.35						1.00	0.21 ***				
CI*Y_CI*(GROWTHPC(-1)-GROWTHPC_CI(-1))	0.01	0.02	0.04						0.13	0.03 ***				
CI*Y_CI*(LSCHOOL-LSCHOOL_CI)	0.14	0.10	0.52						0.21	0.19				
CI*Y_CI*(FINDEV4-FINDEV4_CI)	0.14	0.12	0.53						-0.58	0.17 ***				
CI*Y_CI*(RISK-RISK_CI)	0.00	0.01	-0.02						-0.03	0.01 ***				
CI*Y_CI*(RPI(-1)-RPI_CI(-1))	-0.09	0.05 *	-0.32						-0.93	0.14 ***				
CI*Y_CI	1.11	0.20 ***	0.00						0.97	0.33 ***				
EWN*Y_EWN*(OLD-OLD_EWN)				-5.79	2.93 **	-18.46					-8.47	4.27 **		
EWN*Y_EWN*(YOUTH-YOUTH_EWN)				-1.76	0.39 ***	-5.62					-2.07	0.55 ***		
EWN*Y_EWN*(LLE-LLE_EWN)				-0.72	0.47	-2.30					-1.72	0.72 **		
EWN*Y_EWN*(LGDPPC(-1)-LGDPPC_EWN(-1))				0.57	0.17 ***	1.82					0.64	0.25 ***		
EWN*Y_EWN*(GROWTHPC(-1)-GROWTHPC_EWN(-1))				-0.01	0.03	-0.02					0.10	0.04 ***		
EWN*Y_EWN*(LSCHOOL-LSCHOOL_EWN)				0.40	0.14 ***	1.27					0.26	0.22		
EWN*Y_EWN*(FINDEV4-FINDEV4_EWN)				-0.30	0.18 *	-0.95					-0.64	0.29 **		
EWN*Y_EWN*(RISK-RISK_EWN)				-0.01	0.01	-0.04					0.00	0.01		
EWN*Y_EWN*(RPI(-1)-RPI_EWN(-1))				-0.09	0.06	-0.30					-1.24	0.23 ***		
EWN*Y_EWN				0.84	0.34 ***	0.00					0.79	0.52		
OLD-OLD_NIL							-32.07	5.95 ***					11.92	2.27 ***
YOUTH-YOUTH_NIL							-6.16	1.55 ***					-32.70	9.10 ***
LLE-LLE_NIL							-17.08	3.72 ***					-7.52	1.98 ***
LGDPPC(-1)-LGDPPC_NIL(-1)							5.77	0.92 ***					-28.57	5.85 ***
GROWTHPC(-1)-GROWTHPC_NIL(-1)							0.11	0.13 ***					6.22	1.43 ***
LSCHOOL-LSCHOOL_NIL							1.78	1.10					0.29	0.19
FINDEV4-FINDEV4_NIL							-0.54	0.60					2.32	1.66
RISK-RISK_NIL							-0.03	0.04					-1.75	0.81 **
RPI(-1)-RPI_NIL(-1)							-1.84	0.62					0.00	0.05
CI							-1.32	1.37 ***					-3.18	0.92 ***
Y_CI							-0.04	0.03					-1.88	1.82
R-squared	0.32			0.23			0.40		0.56		0.43		0.42	
Adjusted R-squared	0.30			0.20			0.37		0.53		0.39		0.38	
# countries	74			74			74		43		43		43	
# obs.	365			365			365		205		205		205	

Note: Same as Table 4.

Table 9 Regression results for current account balance

	CA1			CA2			CA3	
	Coefficient	Std. Error	Coeff.*mean(CI*Y_CI)	Coefficient	Std. Error	Coeff.*mean(EWN*Y_EWN)	Coefficient	Std. Error
C	-1.72	0.34 ***		-1.18	0.32 ***		1.55	1.38
CI*Y_CI*(OLD-OLD_CI)	-3.20	1.82 *	-12.20					
CI*Y_CI*(YOUTH-YOUTH_CI)	0.10	0.23	0.38					
CI*Y_CI*(LLE-LLE_CI)	-0.28	0.34	-1.09					
CI*Y_CI*(LGDPPC(-1)-LGDPPC_CI(-1))	0.49	0.15 ***	1.87					
CI*Y_CI*(GROWTHPC(-1)-GROWTHPC_CI(-1))	0.06	0.02 ***	0.23					
CI*Y_CI*(LSCHOOL-LSCHOOL_CI)	-0.13	0.13	-0.50					
CI*Y_CI*(FINDEV4-FINDEV4_CI)	0.11	0.12	0.40					
CI*Y_CI*(RISK-RISK_CI)	0.00	0.01	0.01					
CI*Y_CI*(RPI(-1)-RPI_CI(-1))	-0.06	0.10	-0.23					
CI*Y_CI	0.44	0.23 **	0.00					
EWN*Y_EWN*(OLD-OLD_EWN)				-0.91	2.46	-2.90		
EWN*Y_EWN*(YOUTH-YOUTH_EWN)				0.73	0.32 **	2.32		
EWN*Y_EWN*(LLE-LLE_EWN)				-0.33	0.42	-1.06		
EWN*Y_EWN*(LGDPPC(-1)-LGDPPC_EWN(-1))				-0.12	0.14	-0.37		
EWN*Y_EWN*(GROWTHPC(-1)-GROWTHPC_EWN(-1))				0.06	0.02 ***	0.20		
EWN*Y_EWN*(LSCHOOL-LSCHOOL_EWN)				0.23	0.13 *	0.75		
EWN*Y_EWN*(FINDEV4-FINDEV4_EWN)				-0.11	0.17	-0.34		
EWN*Y_EWN*(RISK-RISK_EWN)				0.02	0.01 ***	0.07		
EWN*Y_EWN*(RPI(-1)-RPI_EWN(-1))				-0.60	0.13 ***	-1.90		
EWN*Y_EWN				-0.23	0.30	0.00		
OLD-OLD_NIL							-7.92	5.53
YOUTH-YOUTH_NIL							2.11	1.20 *
LLE-LLE_NIL							-5.24	3.56
LGDPPC(-1)-LGDPPC_NIL(-1)							2.48	0.87 ***
GROWTHPC(-1)-GROWTHPC_NIL(-1)							0.30	0.11 ***
LSCHOOL-LSCHOOL_NIL							0.56	1.01
FINDEV4-FINDEV4_NIL							-0.41	0.49
RISK-RISK_NIL							0.03	0.03
RPI(-1)-RPI_NIL(-1)							-1.09	0.56 **
CI							-0.33	1.11
Y_CI							-0.04	0.03
R-squared	0.36			0.43			0.35	
Adjusted R-squared	0.31			0.39			0.30	
# countries	43			43			43	
# obs.	205			205			205	

Note: Same as Table 4.