

Current Account Balances, Financial Development and Institutions: Assaying the World “Saving Glut”

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October 2, 2006

Abstract

We investigate the medium-term determinants of the current account using a model controlling for institutional development. Our findings suggest that a one percentage-point increase in the budget balance would increase the current account balance by 0.10 – 0.49 percentage-points for industrialized countries. More developed financial markets would lead to less saving only for countries with highly developed legal systems and open financial markets. For developing and emerging-market countries, greater financial development causes *higher* saving. Asian current account surpluses seem to be driven by depressed investment, not excess saving. Furthermore, developed asset markets would more likely contribute to current account deterioration.

JEL Classification Nos.: F32, F41

Keywords: Current account; net foreign assets; saving glut; investment drought; panel regressions; capital controls, institutional development.

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1. Introduction

The development of enormous and persistent current account imbalances over the past decade has been the topic of intense debate in academic and policy circles. As illustrated in Figure 1, the U.S. current account to GDP deficit of 5.8 percentage points is unprecedented by historical standards, and as documented by Edwards (2005), high in comparison to other developed economies.

A number of explanations have been forwarded for the recent widening of the U.S. current account deficit. Roughly speaking, the arguments can be categorized as either domestic or international in nature. Some argue that the main reason for the increase in U.S. current account imbalances is the decline in U.S. saving, especially public sector saving, since 2002. In this “twin deficit” argument, the current administration’s expansionary fiscal policy bears the greatest blame. Greenspan (2005a,b), Ferguson (2004) and others have, on the other hand, argued that the impact of fiscal policy on the current account balance is small.

The “global saving glut” explanation has been expounded by Bernanke (2005), Clarida (2005a,b), and Hubbard (2005). This argument views excess saving from Asian emerging market countries, driven by rising saving and collapsing investment in the aftermath of the financial crisis (and to a lesser extent Europe), as the cause of the U.S. current account deficit. More recently, the burgeoning surpluses of the oil exporters, ranging from the Persian Gulf countries to Russia, have moved to the fore as sources of excess saving. From this perspective, the U.S. external imbalance is a problem made overseas, and amenable to a solution only in the longer term, as better developed and more open financial systems mitigate this excess saving problem.

Surprisingly, despite the popularity of the saving conjecture in (American) policy circles, there has been little empirical work that takes seriously the global saving glut theses.¹ In this paper, we remedy this deficiency by analyzing the determinants of current account balances for industrial and developing countries, while empirically controlling for differences in institutional environment across countries. The data set we employ covers a large and heterogeneous group of countries (19 industrial, 70 developing) over a relatively long time span (1971-2004).

¹ One exception is Gruber and Kamin (2005). Roughly contemporaneously with us, they have written a paper closely related to this one. They examine different aspects of the “savings glut” and “Bretton Woods II” (Dooley, et al., 2003) hypotheses. General discussion of global savings and investment patterns is contained in IMF (2005), CBO (2005), Higgins (2005) and the *Economist* (2005).

Our empirical approach relies upon the approach of Chinn and Prasad (2003). Their study provided a broad empirical characterization of the medium-term determinants of current account balances for a sample of industrial and developing countries from the perspective of longer-run saving-investment balances. This paper updates and extends their work by incorporating a potentially important factor identified by Bernanke (2005), namely the effects of legal and institutional development.

Whether one takes the twin deficits or global saving glut argument, the effect of legal and institutional development cannot be dismissed a priori, although it clearly matters more in the latter case. In addition to macroeconomic attributes such as the stage of development, demographic profile, and the government budget balance, the legal environment and the level of institutional development should be important determinants for saving and investment decisions since they affect the rate of returns from these activities. Also, the extent of institutional development should enhance the effectiveness of financial development and other policy implementations such as financial opening.

This paper also devotes special attention to the effect of financial development and examine whether the “financial deepening” argument (Edwards, 1996) or the saving glut argument is applicable for sample countries’ saving determination. In this regard, we estimate a model that controls for financial deepening and interacts it with other variables such as institutional development and financial openness. We will also investigate whether the recent current account imbalances of the United States and emerging market countries in East Asia can be explained by the development in asset markets.

The main findings are as follows. The budget balance is an important determinant of the current account balance for industrial countries; the coefficient for the budget balance variable is 0.15 in a model controlling for institutional variables. A series of robustness checks yield the results that a one percent point increase in the budget balance (above the world weighted average) should lead to a 10 to 49% point increase in the current account balances. We also find that institutional development is an important determinant for the current account balance, but mainly for higher income countries, although it is important for both saving and investment determination. More importantly, our empirical findings are *not* consistent with the argument that the more developed financial markets are, the less saving a country undertakes. For most of the less developed countries (LDCs) and emerging market group (EMG) countries, if there is, the

reverse is true; more financial development leads to *higher* saving. Furthermore, there is no evidence of “excess domestic saving” in the Asian emerging market countries, though they seem to have suffered from lower investment during the post-crisis period. For the United States, our analysis confirms the view that it is a saving drought – not investment boom – that is contributing to the enlargement of current account deficits. We also find that for industrialized countries, the deterioration of the current account that is not predicted by our baseline model is associated with the recent boom in equity markets as well as housing markets.

2. Data and Estimation

2.1 The Specification

We estimate regressions of the general form:

$$y_{i,t} = \alpha + X_{i,t}B + Z_{i,t}\Gamma + u_{i,t} \quad (1)$$

where y is either the current account balance, national saving, or investment, all expressed as a share of GDP, X is a vector of macroeconomic and policy variables such as net foreign assets and the budget surplus, and Z is a vector of financial development and institutional factors, all except net foreign assets expressed relative to the global mean. The choice of the first set of variables follows Chinn and Prasad (2003), while that of the second set is inspired by the literature on financial development as surveyed by Chinn and Ito (2006).

2.1.1 Macro Variables

Net foreign assets to GDP ratio: From an intertemporal perspective, the stock of net foreign assets (NFA) serves as an important initial condition, given that the current account is the sum of the trade balance and the return on a country’s stock of NFA (or payment on its net foreign liabilities position). Alternatively, from a buffer stock saving perspective, higher levels of initial net foreign assets should be associated with subsequent lower current account balances.

Government budget surplus to GDP ratio: A variety of models predict a positive relationship between government budget balances and current accounts over the medium term. In the absence of a full Ricardian offset via private saving, an increase in the government budget balance could

lead to an increase in national saving. In developing economies, where a greater proportion of agents may be liquidity constrained, this relationship might be expected to be more pronounced.

Relative income: The “stages of development” hypothesis for the balance of payments suggests that countries, as they move from a low to an intermediate stage of development, typically import capital and, therefore, run current account deficits. As they reach an advanced stage of development, countries run current account surpluses in order to pay off accumulated external liabilities and also to export capital to less advanced economies.

Demographics: The literature on the determinants of national saving has pointed to a number of additional “structural” determinants such as demographics. Masson et al. (1998) show that the dependency ratio is one of the key determinants of private saving.

Uncertainty: Terms of trade volatility is another potential determinant of medium-term fluctuations in current accounts. Agents in economies that face more volatile terms of trade might save more for precautionary reasons in order to smooth their consumption streams in the face of volatile income flows.

Trade Openness: Country characteristics that reflect macroeconomic policies could also be relevant for current account determination. The degree of openness to international trade could reflect policy choices, including tariff regimes.

Growth Rates: Countries with high labor productivity growth may attract more capital inflows with higher expected rates of returns in their asset markets, as has been argued to be the case with the U.S. whose buoyant labor productivity growth may have been the main cause of the recent rise in current account deficits. As a proxy to productivity growth, we include real output growth rates.

These macro data are drawn primarily from the World Bank’s *World Development Indicators* and supplemented by the IMF’s *International Financial Statistics* and the *World Economic Outlook* database. For the measure of net foreign asset, we use the data created by Lane and Milesi-Ferretti (2006). Additional details are contained in the Data Appendix.

2.1.2 Institutional Factors

Financial Development/Deepening: Another determinant of saving [emphasized by Edwards (1996)] is “financial deepening,” usually proxied by the ratio of a monetary aggregate such as M2 to GDP. The traditional interpretation of this variable as a measure of the depth and

sophistication of the financial system suggests that financial deepening could induce more saving. However, there is a contrasting view that more developed financial markets lessen the need for precautionary saving, and thereby lower the saving rate. Bernanke (2005) argues that greater financial development will remedy the global saving glut in the long run by inducing a decline in the saving rate in the emerging Asia. Similarly, Clarida (2005a,b) argues that the sophisticated equity markets in the U.S. absorb excess saving from all over the world, leading to higher current account deficits. Given these arguments, we believe that financial market development must be taken seriously in any empirical examination.

To measure financial development, we use private credit to GDP (*PCGDP*) – in contrast to Chinn and Prasad’s (2003) use of M2 to GDP – primarily for data availability reasons.^{2,3} Also, we measure the level of financial development using the level of private credit creation (as a ratio to GDP) as the deviation from the world weighted average. By measuring the level of financial development in relative terms, we believe that we can examine the effect of financial development for both creditor and debtor countries and test whether the saving glut or financial deepening view is applicable. That is, a negative correlation between the overall effect of further financial development and current account or saving suggests that countries with underdeveloped (well-developed) financial markets are creditor (debtor) countries and export their excess capital to the rest of the world (import excess capital from abroad) and run current account surplus (deficit) – the saving glut argument. A positive correlation, on the other hand, is more consistent with the conventional financial deepening argument.

Financial Openness: How open a country is to cross-border financial transactions should also affect capital flows across countries, and thereby the current account. One critique of the global saving glut view focuses on the question of timing – why do excess saving is flow into U.S. financial markets now, and not earlier? A frequent refrain is that, especially for the East Asian economies, comprehensive financial liberalization policies have been implemented, and thereby

² One may think of equity market development and its measures. In fact, the dataset of Beck, et al. also contains data to measure the development in equity markets. They are, namely, stock market capitalization (*SMKC*), total value of stocks traded (*SMTV*), and stock market turn over ratio (*SMTO*). However, it is extremely difficult to rely upon these measures as measures of equity market development, because with these measures, one cannot distinguish between market bubble behavior and real market development. Therefore, we do not include equity market development measures in our estimation. However, we will still examine the effect of equity market development using these measures in a later subsection in the way that the aforementioned distinction is less of an issue. See subsection 4.3.

³ The *PCGDP* data are drawn from Beck, Demirgüç-Kunt, and Levine (2001).

allowing excess saving to flow into the U.S, and other countries with developed financial markets. Thus, the openness of financial markets should influence countries' current account balances via the impact on saving and investment decisions.

Our metric of financial openness is the Chinn-Ito (2006) index. This index is the first principle component of the binary variables pertaining to cross-border financial transactions based upon the IMF's categorical enumeration reported in *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)*. Higher values of this index indicate greater financial openness.⁴

Legal variables: A society's legal foundations and institutions define the context wherein financial transactions and economic decisions are made. This proposition can have implications along any number of dimensions. Whether the legal system clearly establishes law and order, minimizes corruption, or whether the administrative branch of the government protects property rights efficiently are all important determinants of the incentives to save and invest. Decisions by foreign residents will also be affected.

We incorporate the effect of legal and institutional development by inclusion of the variable *LEGAL*, calculated as the first principal component of law and order (*LAO*), corruption (*CORRUPT*), and bureaucracy quality (*BQ*), all drawn from the ICRG. The data series are available for the period of 1984 through 2004, but are included in the regression as the period-average.^{5,6}

Variable definitions and data sources, along with the list of countries in the sample and country groupings, are presented in the Data Appendix.

⁴ Greater detail about the construction of this index can be found in Chinn and Ito (2006). The data are updated to 2004 and cover more countries (163 countries) than what can be found in Chinn and Ito. The updated data are available at <http://www.ssc.wisc.edu/~mchinn/>.

⁵ In other words, the data on legal/institutional development are cross-sectional in nature. However, inclusion of these variables as time-invariant factors should not pose a substantial problem for our analysis since these legal/institutional variables are likely to change only very slowly. Furthermore, in order to minimize measurement errors and possible bias (as Wei (2000) points out in reference to the corruption indices in his paper), we think it is better to use period averages.

⁶ In the original series, *KAOPEN* and *LEGAL* series range between negative and positive values since they are the first principal components. However, in order to avoid the complexity of interpreting the estimated coefficients, these variables are adjusted such that the minimum value is zero, i.e., they range between zero and some positive values.

2.3 The Estimation Approach

The sample for our analysis covers both industrial and developing countries. The underlying database has annual data for 19 industrial and 70 developing countries covering the period 1971-2004. We examine three variables – the current account balance, and its components, national saving, and investment, all expressed as a ratio to GDP.

One potential problem with developing country data is the possibility of significant measurement error in annual data. To mitigate these concerns, and since our interest is primarily in medium-term rather than short-term variations in current accounts, we construct a panel that contains non-overlapping 5-year averages of the data for each country.⁷ This procedure also has the advantage of abstracting from short-run variations in current accounts and related variables, which are not of central interest.

All the variables to be included in the estimation, except for net foreign assets to GDP, are converted into the deviations from the GDP-weighted world mean before being calculated into the five year averages. This conversion is made to prevent trends apparent in some of the variables from affecting the estimation, and also to make the estimation consistent with open macro theory that only relative performance of the variables across different markets matters for the determination of cross-border capital flows.

Furthermore, we include interaction involving these variables in the estimation because the economic environmental factors may affect the way in which financial development might affect saving and investment. Interactions between the financial development and legal variables (*PCGDP* times *LEGAL*), interactions between the financial development and financial openness variables (*PCGDP* times *KAOPEN*), and interactions between legal development and financial openness (*LEGAL* times *KAOPEN*). The financial and legal interaction effect is motivated by the conjecture that deepening financial markets might lead to higher saving rates, but the effect might be magnified under conditions of better developed legal institutions. Alternatively, if greater financial deepening leads to a lower saving rate or a lower investment rate, that effect could be mitigated when financial markets are equipped with highly developed legal systems. A similar argument can be applied to the effect of financial openness on current account balances.

⁷ The 2001-04 period has been compressed into one observation, and so represents only four years instead of the standard five.

3. Empirical Results

3.1. The Basic Specification

We begin our investigation with a basic specification that excludes institutional variables [comparable to that used by Chinn and Prasad (2003)], thereby providing a point of comparison.⁸ The estimation results are reported in Table 1. Since these results are sensitive to the inclusion of the African countries, we also report separate sets of results with and without the African countries included for the developing country sample. We also report separate results for an emerging market group that differs somewhat from the developing country sample (see the Appendix for the composition of each subset).

Interestingly, Table 1 shows a significantly positive relationship between current account and government budget balances for all the sample groups. A one percentage point increase (above the world GDP-weighted average) in the budget balance would lead to a 0.16 percentage point increase in the current account balance for industrialized countries (IDC), a different result from Chinn and Prasad (2003), who examined a shorter sample from 1971 to 1995. The estimated coefficient is 0.24 and 0.22 for less developed countries except for African countries (ex-Africa LDC) and emerging market countries (EMG), respectively, although we find the differences in these coefficients on the budget balance are not statistically significant when pairs of two subsamples are pooled and the homogeneity of estimated coefficient is tested.⁹

We also regress national saving and investment on the same set of regressors. Figure 2 displays the estimated budget balance coefficients in each of the regressions and sample groups.¹⁰ The results show that the saving channel does indeed appear to be important in the

⁸ We omit the financial openness variable so as to heighten the distinction between the basic macro variables and the institutional factors. In Chinn and Prasad (2003), IMF's *AREAER* dummies for current account and capital account restrictions ("k2" and "k3") are used to capture effects of restrictions on external transactions. However, these variables turned out to be statistically weak in many regressions.

⁹ However, the homogeneity of all coefficients was rejected for all pairs of subsamples, confirming heterogeneity of saving-investment determinations among subgroups of countries.

¹⁰ The estimated coefficients on budget balances in the national saving and investment regressions do not add up exactly to that in the current account regressions. At least two reasons can be identified for this outcome. First, while the current account regressions account for the covariance of national savings and investment, simply adding two coefficients does not. That is, if some change in the budget balance affects national saving and investment independently, as long as the change in national saving and investment does not affect each other, the net effect of the budget balance would be the same as that on current account balances. However, if national saving and investment are highly correlated, as has been found in many studies such as Feldstein and Horioka (1980) and

(continued...)

sense that national saving and public saving are positively correlated, but only for industrialized and emerging market countries.¹¹ The budget balance appears to have opposite effects on investment between industrialized countries and less developed countries, significantly positive for the former and negative for the latter.¹²

One more noteworthy aspect of Table 1 relates to the financial deepening variable. Only in the industrial countries' current account regressions, it exhibits a negative coefficient, though statistically insignificantly. With these results, one may not be able to conclude that more developed financial markets lead to decreased current account balances, as posited by the adherents of the global saving glut thesis.¹³

As we discussed in a previous section, we also suspect that other factors such as institutional infrastructure and legal systems that may have caused omitted variable bias on the estimates. As a first step of exploring the effect of cross-country differences, we redid the estimation including country and time fixed effects and dropping those regressors that, by construction, have no time variation – terms of trade volatility and the openness indicator. Once the fixed effects model is estimated, the null hypothesis that country fixed effects are joint zero is significantly rejected for all three models and subsamples.¹⁴

In this exercise, the most interesting result is the finding that the coefficient on the government surplus rises to 0.38, and is significant at the 1% marginal significance level. Figure 3 compares the estimated coefficients on budget balances among different subsamples for the three regression models. In the figure, the effect of improving budget balances on current accounts is distinctively large for industrial countries, and also that the effect mainly comes from

Frankel et al. (1987), simply adding two coefficients does not yield the coefficient in the current account regression. Second, due to differing data conventions (Balance of Payments accounting versus national income accounting definition), the flows may not add up exactly.

¹¹ Bars with solid colors denote coefficients significant at the 10% level whereas those with stripes denote insignificant coefficients.

¹² Homogeneity of the budget balance coefficients is rejected between industrial countries and less developed countries or emerging market countries.

¹³ In the saving regressions (not reported), all the sample groups except for the industrial country group have significantly *positive* coefficients for the financial deepening variable. This issue will be examined more carefully in a later section.

¹⁴ We also conducted the Hausman test for all regressions and subsamples to see whether the distribution of the error terms can be systematically explained by country-specific characteristics. A series of tests found that the fixed effects are confirmed over the random effects for all sample groups except for the developed countries (IDC) and emerging market countries (EMG) groups among the current account regressions; for all except for the IDC group
(continued...)

an improvement in the level of national saving. Such “non-Ricardian” effect is also found in emerging market countries, though the magnitude is much smaller.

It is important to interpret this result. What this means is that, *given* country-specific characteristics, a 1 percentage point increase in the budget surplus to GDP ratio in, for instance the U.S., would result in a roughly 0.4 percentage point improvement in the current account balance. This number is substantially higher than estimates reported in Gruber and Kamin (2005) and cited by Ferguson (2005). On the other hand, the fixed effects estimates are difficult to use to determining the “normal” current account balance, to the extent that a country’s fixed effect is a statement of the effects not captured by the variables included in the regression.

Another interesting finding is that the estimated coefficient on the financial development variable (*PCGDP*) is now significantly negative for the industrialized and emerging market groups (not reported) in both the current account and national saving regressions, consistent with the Bernanke’s conjecture, indicating that once cross-country differences are controlled for, more developed financial markets lead to decreased current account balances. Presumably, this effect occurs through the reduction in national saving due to more efficient allocation of financial resources and thereby reduced need for precautionary saving, although our analysis cannot confirm that. Note that this effect is detected only for higher income countries.

Given that country-specific factors may contribute to cross-country differences in saving and investment determination, we next examine what factors account for the country-specific effects. We regress the estimated fixed effects from the previous analysis on a set of variables that might explain the characteristics of each country. We use as explanatory variables the time-invariant macroeconomic variables indicated in Table 1, as well as the legal development variable (*LEGAL*), financial openness (*KAOPEN*), and associated interaction terms.¹⁵

Regression results (not reported due to conserve space) tell us that country fixed effects can be largely explained by each country’s macroeconomic and institutional factors. For example, country-specific factors are found to explain over 40% of the country-fixed effects in the current account regressions for the ex-Africa LDC and EMG groups. We also found that compared to

(marginally rejected) among the national saving regressions; and for the full sample and the less developed countries group (LDC) among the investment regressions.

¹⁵ The financial openness variable (*KAOPEN*) is included as the period average in this cross-sectional analysis. The dummy for oil exporting countries is also included in the estimations.

when the country-fixed effects are regressed only on macroeconomic factors, inclusion of institutional factors increase the adjusted R-squared by over 20% for these groups. In all regressions and subsamples, the joint significance of the estimates on legal development, financial openness, and their interaction was tested and rejected at conventional significance levels in most of the regressions.¹⁶ This exercise indicates the significance of institutional factors that represent country-specific effects on saving and investment behavior.

3.2 The Institutions-Augmented Model

Given that fixed effects models may detract from much of the economically meaningful parts of the analysis, we now augment our basic model specification with variables aimed at capturing institutional factors, namely the legal development variable (*LEGAL*), financial openness (*KAOPEN*), and associated interaction terms (including those with *PCGDP*). Tables 2-1 through 2-3 display results from panel OLS regressions with institutional variables. Several notable results are obtained.

First, inclusion of institutional variables and their interaction terms improves the fit of the model, which are observed with improved adjusted R-squared especially for the industrial country group.¹⁷ When the F-test is conducted to test the hypothesis that the legal variable, the financial openness index, and their interaction terms are jointly zero, the null hypothesis is constantly rejected for all three models for the industrialized and less developing countries groups (marginally for the EMG group). The results indicate that institutional development is an important determinant of current account balances.

In Table 2-1, despite inclusion of institutional variables and their interactions, the significantly positive relationship between current account and government budget balances is detected in all sample groups as in the previous analysis. The point estimate on budget balances is a statistically significant unchanged, 0.15, for the industrialized countries group, which implies that the coefficient on the budget balance for the IDC group is robust to inclusion of institutional variables (Note that a ± 2 standard error confidence interval encompasses values as high as

¹⁶ This exercise typically yields poor results for the IDC group. In a cross-sectional framework like this, the financial openness variable varies quite narrowly for this subgroup reflecting that countries in this group have taken similar path of financial liberalization, and therefore, is a weak explanatory variable to account for the country fixed-effects.

0.34).¹⁸ The estimated coefficients on budget balances remain close to what we found in Table 1 the other sample groups (see Figure 4 for comparison).

Gruber and Kamin (2005) obtain similar results in their analysis. Analyzing a smaller sample of 71 countries over the 1982-2003 period, they find that the budget balance has a positive effect on the current account, with a magnitude of 0.09-0.14. Trade openness exhibits an effect similar to what we obtain. Perhaps most importantly, they also find that their governance indicators (the Kaufmann et al. measure) induces a reduction in the current account balance.¹⁹ These findings suggest that several of the key effects we have detected are robust.

We also re-estimate the same regressions using each of the components of the *LEGAL* variables, namely, *CORRUPT*, *BQ*, and *LAO*, in order to isolate which variable drives the results. The test results (not reported) suggest that the (inverse) corruption index is the most significant contributor among the three institutions variables, followed by law and order and the bureaucracy quality index in the order of significance. When the anti-corruption index is used, the estimated coefficient on the budget balance for the industrial countries group becomes as high as 0.24. Also, the estimated coefficient on the inverse-corruption index is negative, insignificantly for the IDC group and significantly for the LDC and ex-Africa LCD groups, suggesting that countries with lower degrees of corruption may experience capital inflows (see e.g., Wei, 2000).

Inspecting the results from the saving and investment regressions yields additional insights (Tables 2-2 and 2-3). For these sets of regressions, the null hypothesis that the institutional variables and their interactions are jointly insignificant is strongly rejected for all samples except for the ex-Africa LDC and EMG groups in the national saving regressions, suggesting that institutional development is important for saving and investment determination.

The saving regression with the institutional variables (Table 2-2) shows that a one percentage point increase in the budget balance leads to a 0.23 percentage point increase in the

¹⁷ The sample size changes between the models with and without institutional variables. However, even when the samples are held constant across specifications, the improvement of the adjusted R-sq. is still observed.

¹⁸ This finding is similar to the finding of Erceg et al. (2005) whose simulation results show the coefficient of the budget balance is around 0.20.

¹⁹ In their analysis, they include the change in growth rate, as well as dummy variables for financial (i.e., banking) crises. On the other hand, they omit measures of capital account openness, financial development as well as terms of trade variability. They also exclude interaction effects involving legal development, thus ruling out nonlinearities of this type.

national saving rate for industrialized countries and a 0.20 point increase for emerging market countries, a contrast with the less developed countries groups, which yields much smaller and insignificant coefficients.²⁰ With these results, we can surmise that for the IDC and EMG groups, the government budget balance has a non-Ricardian effect on the national saving rate. For the LDC or ex-Africa LDC group, we cannot reject the null hypothesis of Ricardian equivalence.²¹

In the investment regression, the estimated coefficient on the budget balance is no longer significant for the IDC group, but significantly negative for the LDC, ex-Africa LDC and EMG groups, possibly indicating a difference between IDC and non-IDC countries in the way budget balances affect the level of investment – which is statistically confirmed. Given the estimated sign of the coefficient on the budget balance variable, industrialized countries' public financing may crowd out investment.²² For ex-African less developed countries or emerging market countries, improving budget balances worsens investment, which means deficit spending usually crowd-in effects on investment among these countries. This difference can be explained by the level of capital formation of these countries that may not be as close to the steady state level as industrialized countries.

The effect of financial development on saving and investment is noteworthy as well. Since the financial development variable (*PCGDP*) is interacted with other institutional variables (*LEGAL* and *KAOPEN*), however, we must be careful about interpretation of the effect of financial development. Panels A, B, and C in Table 3 shows the total effect on current account, national saving, and investment, respectively, if the level of private credit creation rises by 10% point above the world weighted average conditional on the levels of *LEGAL* and *KAOPEN* – whether their levels are low 10 percentile, mean, or high 10 percentile in each subsample.^{23,24}

²⁰ We also found out that Singapore is an outlier in the EMG group, especially for the current account and national saving regressions. When this country is removed from the sample, the magnitude of the estimated coefficient becomes smaller, though not as small as those for the LDC or ex-Africa LDC group. Again, homogeneity of the coefficient on budget balances was not rejected between groups.

²¹ Other studies also find non-Ricardian effects of the government budget balance on national savings such as De Mello, et al. (2004) for 21 OECD countries, World Bank (2005) for 46 industrialized and emerging market countries, and Gale and Orszag (2004) for the United States. In these studies, the effect of the government budget balance on national savings ranges from 0.50 to 0.80 percent (i.e., the Ricardian offset in private savings ranges from 0.50 to 0.20 percent). Kormendi and Protopapadakis (2005), on the other hand, do not find evidence for the non-Ricardian offset on both the real interest rate and current accounts for the United States.

²² This is consistent with the non-Ricardian effect on national savings found in the saving regression.

²³ The *KAOPEN* variable is included in the calculation as the average of the 1996-2004 period.

Although the regression results for the financial development level or its interactions are not uniformly significant, this exercise illustrates how the impact of financial development can vary with the level of legal development and financial development. We discuss the total effect of financial development on current account, but also discuss the total effects on national saving, investment (Panels B and C).

Panel A reports the total effect of financial development on current account conditional on both legal development and financial openness. For example, the panel for the group of industrialized countries shows that when an industrialized country equipped with both legal development and financial openness levels above the high 10 percentile (i.e., the southeast cell in the matrix) experiences a 10% increase in financial development measured by *PCGDP* (as the deviation from the world weighted average), its current account as a ratio to GDP would worsen by a 0.35 percentage point. From this panel, we can see that only industrialized countries with low levels of legal development would experience a current account improvement when their financial markets develop regardless of the levels of financial openness. Among emerging market countries, the effect of financial development tends to be bigger for those countries with less open capital accounts and lower levels of legal development. *As far as the EMG group is concerned, further financial development would lead to current account deterioration only if a country is equipped with high levels of legal development or with high levels of financial openness (but not with the low 10 percentile level of legal development).*

It is also interesting to disaggregate the effect of financial development into that of national saving and that of investment, that are shown in Panels B and C, respectively. Although the total effects of financial development on saving and investment shown in Panels B and C do not add up strictly to those on current accounts (Panel A) as has been already discussed, examining the effects of financial development on national saving and investment and their net effect is also insightful.

Panel B shows that, for less developed and emerging market countries, the effect of higher levels of financial development on national saving is smaller for economies with higher

²⁴ Between the 1991-95 and 2001-04 time periods, the (five-year average of *relative*) *PCGDP* level – the level of financial deepening above or below the weighted world average – increased by 20.6 percentage points for industrialized countries, 3.7 percentage points for less developed countries, 8.2 percentage points for Asian emerging market countries, and stunning 32.4 percentage points for China.

levels of legal development and more open financial markets. Especially, for those countries with underdeveloped institutional infrastructure where it can be presumed that credit constraint and rationing is severe, the positive impact of further financial deepening on national saving seems to be considerable. However, it also appears that in order for further financial deepening to lead to an increase in investment among developing countries through improved financial intermediation, it is better for countries to be equipped with better legal systems and institutions (Panel C). Interestingly, Bernanke's prediction that the more developed financial markets are, the less saving a country undertakes seem to be validated only by industrialized countries with high levels of legal development regardless of the openness of financial markets, or emerging market countries with high levels of legal development and financial openness. Now that the results seem to bolster Bernanke's argument that more financial development will solve the issue of the saving glut in emerging market countries *with high levels of both legal development and financial openness*, is this finding applicable to emerging market Asian countries?

Panel D of Table 3 categorizes emerging market countries in East Asia depending on the level of legal development and financial openness. The matrix shows that only Hong Kong and Singapore are categorized as countries with highest 10 percentile legal development and highest 10 percentile financial openness, while many Asian emerging market countries are categorized in the groups with the middle or lower level of legal development and financial openness. Figure 5 reports the total effects of a 10 percentage point increase in *PCGDP* on current account, national saving, and investment for Asian emerging market countries and three industrialized countries, Japan, Germany, and the United Kingdom using actual values for each country's legal development and financial openness measures.

According to Figure 5, Hong Kong and Singapore are the only countries for which financial development will cause a negative impact on national saving. Other countries will experience an *increase* in the ratio of national saving to GDP if financial markets develop further. Interestingly, for all the countries, financial development leads to expansion of investment, presumably because of improved credit conditions and financial intermediation. Furthermore, in terms of the effect on net saving – not necessarily the same as that on current account, all countries except for Indonesia and the Philippines will experience worsening of net saving as a result of further financial deepening because the magnitude of the effect on investment exceeds that on national saving. China experienced a stunning 32.4 percentage point increase in private

credit creation (net of change in the world weighted average) between 1996 and 2004. This financial development *alone* led to an increase in national saving by 1.7 percentage points, but also an increase in investment by 2.4 percentage point, suggesting a negative effect of financial development on net saving, but not through a reduction in saving, but through a higher increase in investment than that in saving. Armed with these results, we conclude that financial development reduces the level of current account balances, especially for Asian emerging market countries, but that effect is achieved, not through a reduction in saving rates, but through increased levels of investment.

3.3 Robustness Checks

3.3.1 *The budget Balance, Endogeneity and Business Cycle Effects*

This sort of exercise can involve simultaneity bias. Especially in our framework, it can arise between government budget balances and all of the dependent variables we test. Furthermore, the budget balance variable and other right-hand-side variables may be subject to business cycles despite our sampling method.

Here, we test the robustness of the estimated coefficient on the budget balance in several ways. First, we implement two stage least squares (2SLS) estimation instrumenting the budget balance variable with various variables. The instruments include the dummy for the left-wing government (*LEFT*); military spending as a ratio to GDP (*MILEXP*); yearly changes in unemployment rates (*D_U*); and regional dummies.²⁵

The estimation results are shown in Table 4, in which we only show estimated coefficients on budget balances for different model specifications and different dependent variables. The first two rows in each panel for a different dependent variable show the results

²⁵ The military spending ratio is not included as an instrument in the regressions for industrial countries because it turned out to be insignificant in the first stage regression. The interaction between the left-wing government dummy and the change the unemployment rate is included in the IDC regressions to capture the left-wing government's reaction to change in the unemployment rate. In the LDC and EMG regressions, on the other hand, while the military spending variable is included, neither the unemployment rate change variable nor its interaction with the left-wing government dummy is included due to their statistical insignificance. The rationale for using these instruments follows the past literature on the determinants of budget balances such as Roubini (1991), Roubini and Sachs (1989a, b), Persson and Tabellini (2001), and Braconier and Holden (2004). The definitions and sources of the instruments can be found in Data Appendix. In addition to the variables mentioned in the text, we also tested the dummy for countries with plural political systems; government fragmentation (both from DPI 2004); political constraint, or democracy, index (from Henisz, 2000); and the standard deviation of tax revenues (following Talvi and Vegh, 2005). These variables turned out to be insignificant, and were thereby not included as instruments.

from the 2SLS estimation with and without institutional variables. When compared to the results in Tables 2-1 through 2-3, we can see that, generally, the statistical significance is consistent with those in the previous analysis, and that the magnitude of the estimates (in absolute values) is mostly larger in the 2SLS estimation.

Secondly, we estimate a set of right-hand-side variables with annual frequency, but use HP-detrended series for the variables that exhibit business cycles variation – namely, the budget balance, net foreign asset, relative income, output growth, and financial deepening (*PCGDP*) to minimize possible bias on the estimates caused by business cycles. While sampling five-year period averages should mitigate the effect of business cycles, this sample method may not be sufficient. We apply the OLS and the fixed effects model to the detrended data. The results are displayed in rows (3) and (4) in Table 4, respectively. Since estimation errors using annual panel data may involve serial correlation, we also estimate the model using feasible GLS. Those results, without and with institutional variables and interactions, are reported in rows (5) and (6), respectively.

Across the three sets of regressions and different subsamples, the magnitude and statistical significance of the estimates coefficients are mostly consistent with what we have found in the previous analyses. The consistency is most evident for the industrial country group. Based on the regression results, a one percent point increase in the budget balance would lead to a 10 to 49% point increase in the current account balances, and a 17 to 81% point increase in national saving. With these results, we can safely surmise that an improvement in the government budget balance does improve current account balances for industrialized countries, and that is mainly achieved through an improvement in national saving.²⁶

3.3.2 Alternative Measures of Financial Development

We have used private credit creation as the measure of financial development motivated primarily by expediency. However, as Beck, et al. (2001) and Levine (2005) discuss, private credit creation only represent part of various aspects of financial development. Additionally, given the size of current global imbalances, it is likely that capital flows are influenced not only

²⁶ The results of other variables of our focus, namely financial deepening, financial opening, institutional development, and these interactions, turned out to be qualitatively consistent, but more statistical significant compared to those in previous analyses.

by the level of banking system development, but also by that of securities markets. Hence, as a first step of robustness checks, we construct composite indexes that incorporate other types of financial development and re-estimate the regressions using the indexes instead of *PCGDP*.

We test three composite indexes of financial development. The first one (*FD1*) is the first principle component of private credit creation (*PCGDP*), stock market capitalization (*SMKC*), stock market total value (*SMTV*); the second one (*FD2*) of *PCGDP*, *SMKC*, *SMTV*, private bond market capitalization (*PVBM*), and public bond market capitalization (*PBBM*) – both as ratios to GDP; the third one (*FD3*) of *SMKC*, *SMTV*, *PVBM*, and *PBBM*. We repeat the previous exercise using one of the three composite indexes in place of *PCGDP* (including interactions).²⁷

In order to conserve space, we summarize the results and our observations. For the most part, the signs of the estimated coefficients on financial development and its interactions remain unchanged regardless of the choice of composite index. Moreover, across the three composite indexes, the index and its interaction terms remain significant – or become more significant – for the industrialized emerging market country groups, and particularly for the saving regressions. The generalization we observed about the effect of financial development on national saving – the more (less) open financial markets are and the lower levels of legal/institutional development they are equipped with, the larger the effect of financial development is for industrialized (emerging market) countries – remains unaffected in terms of the statistical significance and signs of the estimate coefficients regardless of the type of the composite indexes. However, this generalization for investment is confirmed only when *FD1* is used, especially for the IDC group but not so much for the LDC and EMG groups. Generally, the results from the investment regressions with the composite indexes are not as robust as the original regressions shown in Table 2-3. Lastly, for the IDC group, the results for the current account regressions are consistent with or even more significant than those with *PCGDP*, though that is not the case for the LDC or EMG group partly because of the weak performance of the investment regressions.

Another possible argument about the way financial development can affect the determination of saving and investment is that financial development itself could be endogenous

²⁷ Because stock market development-related variables are available after 1976, the sample size is affected. *PVBM* and *PBBM* are more restricted and available only after 1990 for a much smaller number of countries (especially for developing countries). The changes in the sample size affect the magnitude and statistical significance of the estimated coefficients, but interestingly, the goodness of fit remained unaffected across different regressions.

with respect to a country's political and social infrastructure before affecting saving and investment, instead of interacting concurrently with institutions. To examine this flow of causality, we conduct 2SLS analysis by instrumenting *PCGDP* with the *LEGAL* variable, financial openness, the rate of inflation, dummies for legal origins (British, French, German, and Scandinavian), and regional dummies.^{28,29}

In the results from the 2SLS regressions (not reported), the estimated coefficient on *PCGDP* is significantly positive for industrial countries in the current account regressions, and for all subsamples in both the national saving and investment regressions, all with larger coefficient magnitude and statistical significance.³⁰ These findings are not directly comparable with what we found in Tables 2-1 through 2-3 because of the differences in the model settings, but suggest that a country equipped with higher levels of legal development and financial openness can develop its financial markets and raise both the saving and investment rates, another finding inconsistent with Bernanke's conjecture.

Lastly, we also test the notion that financial development can function as a magnifier for the effect of other saving-investment determinants, especially budget balances. The idea is that a country with highly developed financial markets may find its budget constraint relaxed because its highly developed financial markets make it easier for the government to finance its budget.³¹ We examine the magnifying role of financial development in two ways. One is to interact the financial development variable with budget balances, and the other to instrument budget balances with financial development and implement a 2SLS estimation. In the first exercise (not reported), the interaction term between financial development and budget balances was not

²⁸ As was in the previous analysis, all instruments were included as five year averages of the deviations from world weighted averages. Also, the instruments found to be insignificant in the first stage regressions were dropped.

²⁹ The choice of instruments is based on the past literature. Levine et al. (2000) find a positive link between the level of legal and regulatory infrastructure and that of financial intermediary development. Chinn and Ito (2006) find that financial openness leads to financial development especially when a country is equipped with developed legal systems and institutions. Boyd, et al. (2001) show that inflation significantly negatively affect both the banking sector development and equity market activity. La Porta, et al. (1998) demonstrate that the national legal origin (whether English, French, German, or Scandinavian) strongly explains cross-country differences in financial development.

³⁰ In these regressions, the budget balance variable performed synonymously with the results shown in Tables 2-1 through 2-3.

³¹ We thank the referee for pointing out this aspect of financial development. The idea of financial development as the magnifier could be applied to other determinants such as old and young dependency ratios. However, since it is not the main focus of this paper, we omit examining the interactive effect between financial development and other variables.

found to be significant for any of the regressions and subsamples. For the second analysis, the financial development variable was not found to be a significant instrument for the budget balance variable. While there can be other ways to examine the magnifying effect of financial development closely, we think that this analysis should be left for future research.

In sum, this series of robustness checks show that the effect of financial development is generally robust across different model specifications and different ways of measuring financial development, especially for industrial countries across the models with three dependent variables. Also, for developing and emerging market countries, we find that the effect of financial development on national saving is more robust than in the investment and current account regressions.³² In sum, our findings provide substantial and robust evidence against the saving glut hypothesis, and the proposition that financial development in less developed countries and emerging markets will reduce current account surpluses abroad.

4. Are the Current Account Imbalances of the Last Decade Atypical?

We next ask whether the pattern of current account imbalances observed over the past decade is atypical. One way to examine the alignment of current account balances is to see the predicted values based on the estimation results. Figure 6 displays the implied current account balances for various countries along with 95% prediction intervals that are calculated using the estimation results shown in Table 2-1. Figure 6 indicates that the U.S. current account deviated from the predicted path in the last two periods while such consistent deviation is not observed in other countries or country group. Given that the 2001-04 observation is just outside the ± 2 standard error band, this indicates that there is something omitted from our model. Similarly, Gruber and Kamin (2005) also find an unexplainable component in the most recent few years.

4.1 Out-of-Sample Prediction of Current Account Balances

Another way to explore this question is to conduct out-of-sample predictions for the 1996-2000 and 2001-04 periods using the estimated coefficients from the regressions

³² The annual panel data analysis with HP-filtered series also yields results close to the original models in terms of the statistical significance and magnitude of the estimates on financial development-related variables.

implemented over the 1971-95 time periods.³³ As in the previous section, we implement two models, one with only the Chinn-Prasad macro variables and the other augmented with institutional variables.

Figure 8 compares the actual values of current account balances as a proportion of GDP with the predicted values calculated using the specifications with or without institutional variables for the 2001-04 period. In Figure 7-1, we can see that actual U.S. current account deficits are larger in 2001-04 than what could be predicted using the pre-1995 estimation results whether with or without institutional variables. As reported in Figure 8, the magnitude of the under-prediction for the 2001-04 period is about 2 percentage points for either model.

The other panels in Figure 7-1 exhibit an interesting contrast; in the 2001-04 period, Germany, Japan, and industrialized countries ex-G3 experienced *larger* current account balances than what is predicted by the models.³⁴

Figure 7-2 shows the out-of-sample predictions for ex-Africa LDCs, Asian emerging market countries excluding China, China, and Korea, based on the models with and without the institutional variables. Prediction errors are also shown in Figure 8. These figures make it clear that Asian emerging market countries, not just China, are experiencing an unpredictably large amount of current account surplus. In the 2001-04 period, the actual current account balance of China is higher than what the model predicts by more than stunning six percentage points, while the Asian emerging market countries excluding China, on average, experienced better current account balances than model predictions by four percentage point.³⁵

4.2 U.S. (Public) Saving Drought vs. Asian Saving Glut?

³³ Since the time fixed effects for the post-1995 time periods are not available, we use the average of the time effects for the 1971-1995 period. This exercise allows us to observe how much the actual current account balances in the post-1995 period differ from what could be predicted using the relationships that obtained up to 1995. Generally, when we examine a subsample, the predicted values will be based on the estimation for that sample group. For example, the predicted values for the group of industrialized countries will be based on the estimation results from the regressions for the subsample, and the predictions for non-industrialized countries will be based on the estimation for ex-African LDC subsample, etc.

³⁴ The predictions for the ex-G3 IDC, ex-Africa LDC, and ex-China EMG countries are based on the weighted averages (based on GDP in U.S. dollars) of the explanatory variables. The actual current account series are also weighted averages.

³⁵ Gruber and Kamin (2005) associate these current account surpluses with the after-effects of financial crises. In this sense, their results are equivalent to the precautionary motive for reserve accumulation identified by Aizenman and Lee (2005).

Today's 700 billion dollar question is where does the U.S. current account imbalance come from? The framework we rely upon allows us to examine the determinants of current account balances from the perspective of saving-investment balances. We now implement out-of-sample predictions again, but for national saving and investment in the post-1995 period. Figure 9 shows the out-of-sample predictions for U.S. national saving and investment using the estimation model with the institutional variables. In these figures, we can see that while the U.S. current account deficit is driven by more-than-expected performance in investment, the deficit during the 2001-04 period is driven rather by "saving drought," rather than "investment boom."

What about the question of where the unpredictably large current account surpluses of the emerging Asia come from? When the same exercise is conducted for China, we find (not reported) that the overperformance of the country's current balances shown in Figure 7-2 is driven by excess saving; while both national saving and investment are larger than model predictions, the extent of the former is larger than the latter. With a group of Asian emerging market countries excluding China, we see a different picture.³⁶ In Figure 10, we can see that the level of national saving for Asian emerging market countries excluding China is about the same as what is predicted by the model predicts in the post-1995 period, countering the global saving glut argument. The investment rate for this region, on the other hand, has been lower than predicted (by three to four percentage points), especially since the 1996-2000 period. The resulting conclusion that East Asia is undergoing an investment drought is consistent with the findings of Higgins (2005).

4.3 The U.S. Current Account Imbalance and the Asset Markets

Our findings indicate that there is an unexplained component of the U.S. deficit. Is this component attributable to excess saving flowing from East Asia? We believe that a domestic factor is at work. Hence, we investigate whether the remarkable behavior of the U.S. asset markets, especially equity market, have some explanatory power.

First, we examine the correlation between equity markets behavior and the prediction errors from the previous subsection. We consider three measures of the behavior of equity

markets: stock market capitalization (*SMKC*), total value of stocks traded (*SMTV*), and stock market turn over ratio (*SMTO*), all drawn from Beck, et al. (2001), as expressed as the five-year averages of the deviations from the world weighted average.³⁷

In Figure 11, casual empiricism suggests a correlation between the stock market development measures and the prediction errors for industrialized countries (left column) and Asian emerging market countries (right) using two different stock market development measures, *SMTV* and *SMTO*. In the figures for the IDC group, we can observe that U.S stock market booms in the 1996-00 and 2001-04 coincides with model over-prediction of the current account balance, i.e., the country experienced larger current account deficits than what the model predicted. While a negative association between the prediction errors and stock market measures can be generalized in the group of Asian emerging market countries, no distinctive correlation is obvious for the group of industrialized countries.

Table 5 reports the results of regressing the prediction errors on the equity market measures. The regression is performed with the weights based on the ratio of GDP to world total (in U.S. dollars). Regional dummies are included in the regression. Because the prediction errors are made from the out-of-sample predictions from the last subsections, the time fixed effect dummies for the 1996-2000 and 2001-04 periods are included. When equity market development is measured using stock market total values or stock market capitalization, the association between the prediction errors and stock market development is significantly negative, i.e., the higher the level of equity market development is, the more likely it is for the regression model to over-predict the current account balances (under-predict the deficits). In other words, countries with higher levels of equity market values tend to experience worsened current account balances than is predicted by the model. However, when the United States is removed from the sample, both the magnitude and the significance level of the estimated coefficient on the stock market development variables drop (the *p*-value becomes 46% and 39% for *SMTV* and *SMKC*, respectively), indicating that the effect of stock market development on the overprediction (or

³⁶ Although we find evidence of excess saving for China, we are unsure of the reliability of the estimates the uncertainty surrounding the country's saving data. For example, GDP was revised upward by 16.8% upward at the beginning of 2006.

³⁷ We view *SMKC* as a measure of the size of equity markets, *SMTO* as a measure of the activeness of equity markets, and *SMTV* as a variable incorporating both aspects. Hence, *SMKC* and to a lesser extent *SMTV* will capture bubble effects.

underprediction) of current account balances (deficits) is significantly large for the United States. Figure 12 presents a consistent picture with this story and illustrates the out-of-sample prediction errors and their portions that can be explained by the relative *SMTV* for the U.S., Germany, Japan, the U.K., China, Korea, and Thailand in the 1996-2000 and 2001-04 periods. The prediction errors for the U.S. and the U.K. are well-explained by the stock market behavior while it cannot be observed in other countries.

We also regressed the prediction errors from the out-of-sample regressions for national saving and investment on the (relative) stock market development measures (not reported). The estimated coefficient on all the stock market measures are found to be significantly negative for the saving regressions. This result is fairly consistent with the recent experience of the U.S. where the dot-com bubble encouraged consumption through wealth effect and depressed *measured* saving, thus contributing to the deterioration of the current account.³⁸

Lastly, we investigate whether recent housing market booms in industrialized countries have contributed to current account balances. As the consumption wealth effect associated with savings in the form of housing has been extensively investigated³⁹, we only make some informal observations regarding the correlation between the housing markets developments and the misprediction of current account balances. As anticipated, the data on housing wealth or housing market conditions is sufficiently limited that our analysis covers only 19 OECD countries.⁴⁰ Figure 8 shows the correlation between the 5-year average of the growth rate of the index of housing wealth (as deviations from the sample weighted average) and the prediction errors from the above exercise. When the prediction errors are regressed on the growth rate of housing wealth alone, the coefficient is found to be significantly negative with the *p*-value of less than 1% (not reported).⁴¹ It must be noted that when the U.S. is removed from the sample, the

³⁸ See the discussion in Greenspan (2005b). The results are also consistent with Mann and Plück's (forthcoming) findings. Using disaggregate U.S. trade data, they under-estimated the trade deficit during the recent period mostly because of under-prediction of *consumer* good and auto imports, components that were driven by the budget deficit (caused by the income tax cuts) and the equity market and housing booms.

³⁹ See Catte et al. (2004), Girouard et al. (2006), OECD (2005), and Campbell and Cocco (2005) among others.

⁴⁰ We have data on either or both of net housing wealth and house price index for 19 OECD countries including Korea. Among these countries, the data on net housing wealth are only available for eight countries: the U.S., the U.K., France, the Netherlands, Canada, Japan, Spain, and Australia. For the remaining countries, house price indexes are used as proxies. Both series of data are converted into real values using CPI in each country and indexed with the year of 2000 as the base year. We thank Dr. Nathalie Girouard and Christophe André for kindly sharing the original data.

⁴¹ The regression is conducted with the weights based on the ratio of GDP to world total (in U.S. dollars).

magnitude of the estimate drops, but it is still significant. Furthermore, when the stock market total value variable is also included as a regressor, the coefficient on the growth rate of housing wealth remains significant though its magnitude falls slightly, while the *SMTV* variable enters significantly as a negative factor. When both variables are included in the sample excluding the U.S., only *SMTV* becomes insignificant. This result may answer the question why capital has flowed to the U.S. and not to other (industrialized) countries possessed of developed financial markets.⁴² Hence, developments in housing wealth appear to be a significant determinant of current account balances.

4. Concluding remarks

We have investigated the medium-term determinants of the current account using a model that controls for institutional factors with an aim to informing the recent debate over the sources of, and solutions to, the “global saving glut” that has thus far lacked empirical content. Our study addresses that gap. Given our motivation, we focused our study on the behavior of current accounts for the United States and emerging market countries in East Asia.

We confirm the results obtained by Chinn and Prasad (2003) that – for the industrialized countries – budget balances play an important role in the determination of current account balances. A one percentage point increase in the budget balance is found to raise the current account balance by 0.15 percentage point. While smaller than the coefficient implied by some macro models, the standard errors on the point estimate are sufficiently large so that one cannot rule out a coefficient as high as 0.40 at conventional significance levels. This result is supported by a sensitivity analysis that suggest that a one percent point increase in the budget balance could lead to a 10 to 49% point increase in the current account balances. We also find evidence for a similar effect among less developed countries. This finding is robust to inclusion of institutional variables, although the inclusion of financial factors seems to matter more – in a statistical sense – for industrialized countries than LDCs. Furthermore, we find evidence that the oft-claimed argument about the effect of financial and legal development as well as financial liberalization is only applicable to this group of countries. This finding suggests that the recommendations for

⁴² Particularly, both the U.S. and the U.K. experienced housing market booms in the 2000-2004 period when both countries experienced deterioration of current account balances whereas Germany and Japan went severe slumps in
(continued...)

financial development as a solution to the global saving glut have only a tenuous empirical basis.

We also found that saving per se is not excessive among the East Asian emerging market countries. Rather, these countries have experienced a shortfall in investment. The United States, on the other hand, seems to be experiencing saving drought, including that in the public sector. Furthermore, current account behavior seems to be related with equity and housing market development, especially since the last few years of the 1990s. We conclude that the more a country's asset markets boomed, the more likely that country was to experience a deterioration of its current account, suggesting that the widening of the U.S. deficit over the last ten years is at least in part attributable to the temporary phenomena. Since these booms were temporary, policies to spur similar booms in East Asian countries would not provide a durable solution to the challenge posed by global imbalances.

the housing market and experienced current account improvement.

Acknowledgements: We thank the discussant Cedric Tille, the issue editors Marcel Fratzscher, Philipp Hartmann, and Christian Thimann, and Steve Kamin, Jaewoo Lee, Catherine Mann, Eswar Prasad, Stephen Cecchetti, and participants at the ECB-JIMFconference, the 4th INFINITI Conference on International Finance, the “WTO, China, and the Asian Economies, IV” conference, the 12th Dubrovnik Economic Conference, and seminars at the Atlanta Fed and Cleveland Fed for helpful comments. Jian Wang provided excellent assistance in compiling the data set, and the Stockholm International Peace Research Institute (SIPRI), Christophe Andre, Nathalie Girouard, Philip Lane and Gian Maria Milesi-Ferretti for generously sharing data. The financial support of faculty research funds of the University of Wisconsin, Portland State University, and the Japan Foundations are gratefully acknowledged.

Data Appendix

The data used in this paper were drawn from a number of different sources. We provide below a listing of the mnemonics for the variables used in the analysis, descriptions of these variables and the source(s) from which the primary data for constructing these variables were taken. A listing of the countries in the final sample, along with the country groupings used in the analysis, is also provided below. For most countries, data were available from 1971 through 2004. Taiwanese data are drawn from the Central Bank of China, International Center for the Study of East Asian Development (ICSEAD), and Asian Development Bank, *Key Indicators of Developing Asian and Pacific Countries*.

Mnemonic	Source*	Variable description
CAGDP	WDI	Current account to GDP ratio
NSGDP	WDI	National saving to GDP ratio
KFGDP	WDI	Capital formation to GDP ratio
GOVBGDP	WDI, IFS	General government budget balance, ratio to GDP
NFAGDP	LM	Stock of net foreign assets, ratio to GDP
RELY	WDI	Relative per capita income, adjusted by PPP exchange rates, Measured relative to the U.S., range (0 to 1)
RELDEPY	WDI	Youth dependency ratio (relative to mean across all countries), Population under 15 / Population between 15 and 65
RELDEPO	WDI	Old dependency ratio (relative to mean across all countries), Population over 65 / Population between 15 and 65
YGRAVG	WDI	Average real GDP growth
YGRSD	WDI	Standard deviation of GDP growth
TOTSD	WDI	Standard deviation of terms of trade
OPEN	WDI	Openness indicator: ratio of exports plus imports of goods and nonfactor services to GDP
PCGDP	BDL	Banking development, ratio of private credit to GDP
SMTV	BDL	Equity market development, stock market total value as a ratio to GDP
SMTO	BDL	Equity market development, stock market turnover
K2	GM, AREAER	Capital controls on current account transactions
K3	GM, AREAER	Capital controls on capital account transactions
KAOPEN	CI	Capital account openness
BQ	ICRG	Quality of Bureaucracy
LAO	ICRG	Law and order
CORRUPT	ICRG	Corruption index

LEGAL	authors' calculation	General level of legal development, first principal component of BQ, LAO, and CORRUPT.
LEFT	DPI2004	Dummy for left-wing government
PLURAL	DPI2004	Dummy for countries with plural political systems
MILEXP	SIPRI	Defense spending (as a ratio to GDP)
POLCONV	Henisz	Political Constraint (democracy) Index
SDTAXREV	authors calculation	Standard deviation of tax revenues
POLITY	Polity IV	Polity (democracy) score
U	WDI	Unemployment rate

* These are mnemonics for the sources used to construct the corresponding. BDL: Beck, Demirgüç-Kunt, and Levine (2001, updated in following years); CI: Chinn and Ito (2006); DPI2004: Database of Political Institutions, Beck et al. (2001 and updated); GM: Gian Maria Milesi-Ferretti (1998); Henisz: Henisz (2000); ICRG: *International Country Risk Guide*; IFS: IMF's *International Financial Statistics*; IMF: Other IMF databases; LM: Lane and Milesi-Ferretti (2006); Polity IV: Polity IV project (Marshall and Jaggers, 2002, updated in 2004); SIPRI: Stockholm International Peace Research Institute (2005), and WDI: *World Development Indicators* (2006).

Country List

	<u>cn</u>	<u>country_name</u>	<u>ldc</u>	<u>emg</u>										
1	612	Algeria	1	0	31	174	Greece	0	0	61	564	Pakistan	1	1
2	614	Angola	1	0	32	258	Guatemala	1	0	62	283	Panama	1	0
3	213	Argentina	1	1	33	263	Haiti	1	0	63	288	Paraguay	1	0
4	193	Australia	0	0	34	268	Honduras	1	0	64	293	Peru	1	1
5	513	Bangladesh	1	1	35	532	Hong Kong	1	1	65	566	Philippines	1	1
6	218	Bolivia	1	0	36	944	Hungary	1	1	66	964	Poland	1	1
7	616	Botswana	1	1	37	534	India	1	1	67	182	Portugal	0	0
8	223	Brazil	1	1	38	536	Indonesia	1	1	68	714	Rwanda	1	0
9	918	Bulgaria	1	1	39	178	Ireland	0	0	69	722	Senegal	1	0
10	748	Burkina Faso	1	0	40	436	Israel	1	1	70	576	Singapore	1	1
11	662	Cote d'Ivoire	1	1	41	136	Italy	0	0	71	199	South Africa	1	1
12	622	Cameroon	1	0	42	158	Japan	0	0	72	184	Spain	0	0
13	156	Canada	0	0	43	439	Jordan	1	1	73	524	Sri Lanka	1	1
14	628	Chad	1	0	44	664	Kenya	1	1	74	732	Sudan	1	0
15	228	Chile	1	1	45	542	Korea	1	1	75	734	Swaziland	1	0
16	924	China	1	1	46	674	Madagascar	1	0	76	144	Sweden	0	0
17	233	Colombia	1	1	47	676	Malawi	1	0	77	146	Switzerland	0	0
18	634	Congo, Rep. Of	1	0	48	548	Malaysia	1	1	78	738	Tanzania	1	0
19	238	Costa Rica	1	0	49	678	Mali	1	0	79	578	Thailand	1	1
20	128	Denmark	0	0	50	684	Mauritius	1	1	80	742	Togo	1	0
21	243	Dominican Republic	1	0	51	273	Mexico	1	1	81	744	Tunisia	1	1
22	248	Ecuador	1	1	52	686	Morocco	1	1	82	186	Turkey	1	1
23	469	Egypt	1	1	53	688	Mozambique	1	0	83	746	Uganda	1	0
24	253	El Salvador	1	0	54	728	Namibia	1	0	84	112	United Kingdom	0	0
25	644	Ethiopia	1	0	55	138	Netherlands	0	0	85	111	United States	0	0
26	172	Finland	0	0	56	196	New Zealand	0	0	86	298	Uruguay	1	0
27	132	France	0	0	57	278	Nicaragua	1	0	87	299	Venezuela	1	1
28	646	Gabon	1	0	58	692	Niger	1	0	88	754	Zambia	1	0
29	134	Germany	0	0	59	694	Nigeria	1	1	89	698	Zimbabwe	1	1
30	652	Ghana	1	1	60	142	Norway	0	0					

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Figure 1: U.S. current account balance, 1970 – 2004

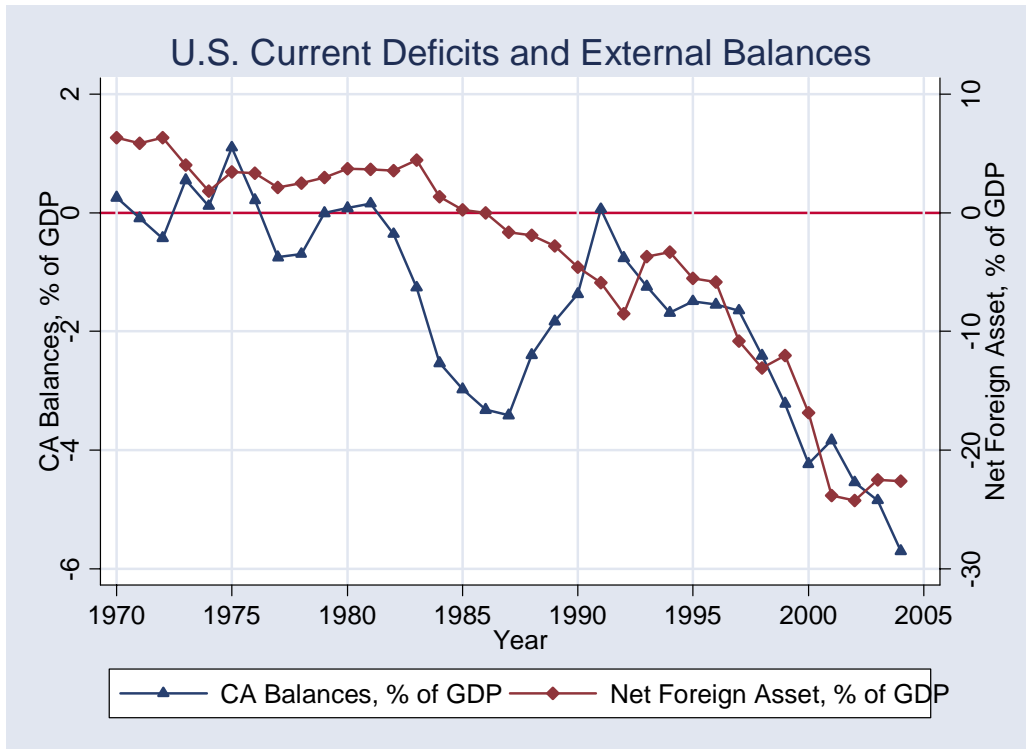
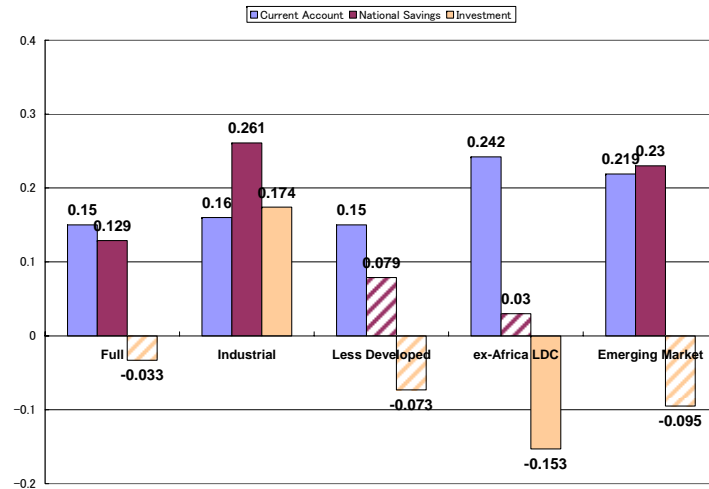
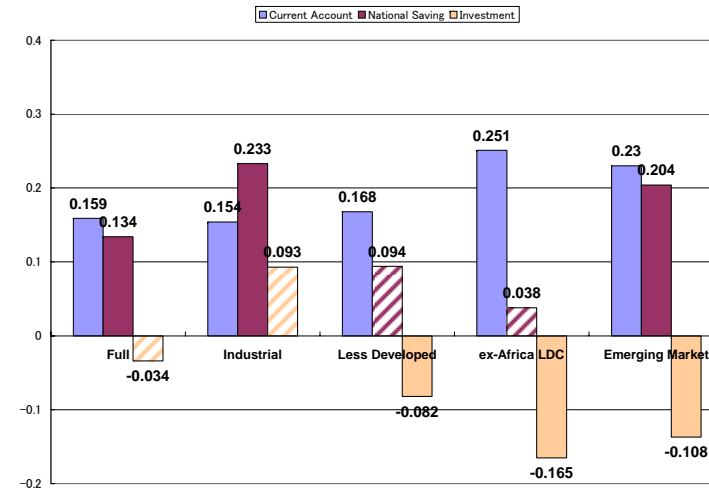


Figure 2: Estimated coefficients on the government budget balance (% of GDP) in the regressions *without* the institutions variables



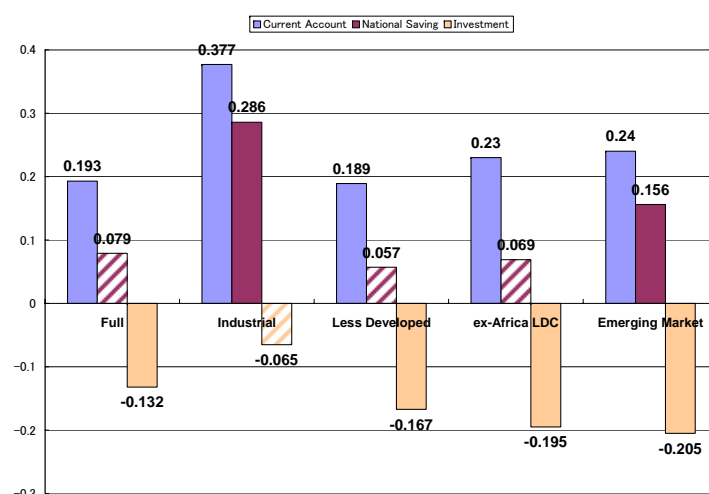
Bars with solid colors denote coefficients significant at the 10% level.

Figure 4: Estimated coefficients on the government budget balance (% of GDP) in the regressions *with* the institutions variables



Bars with solid colors denote coefficients significant at the 10% level.

Figure 3: Estimated coefficients on the government budget balance (% of GDP) in the fixed effects regressions



Bars with solid colors denote coefficients significant at the 10% level.

Figure 5: Effects of a 10% Change in Financial Development (*PCGDP*) on Current Account Balances, Saving, and Investment, IDC and Emerging Asia

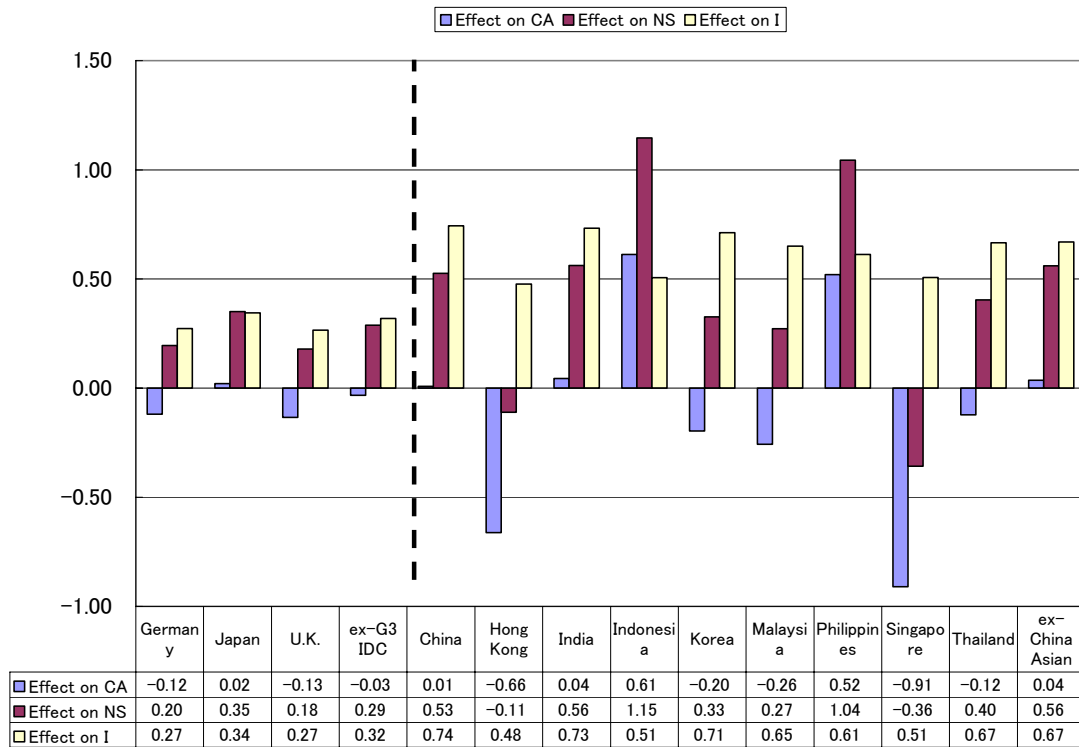


Figure 6: Implied Current Account Balances

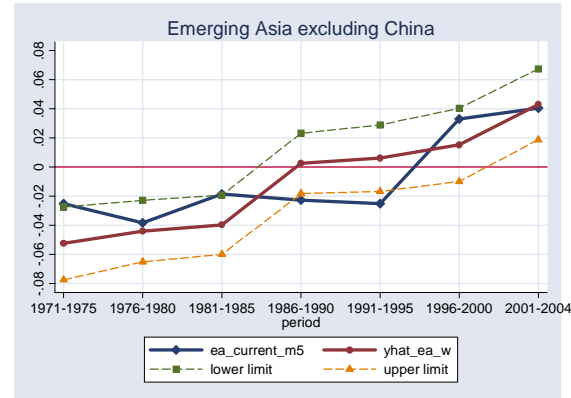
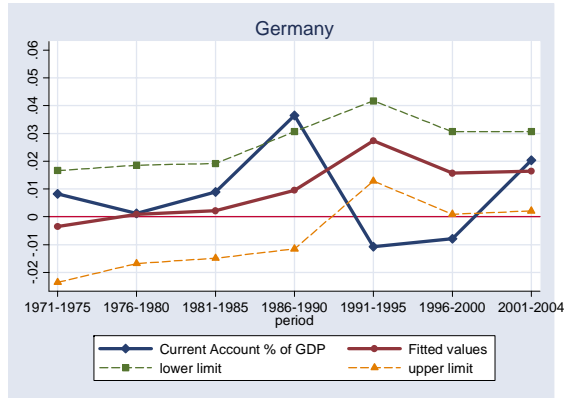
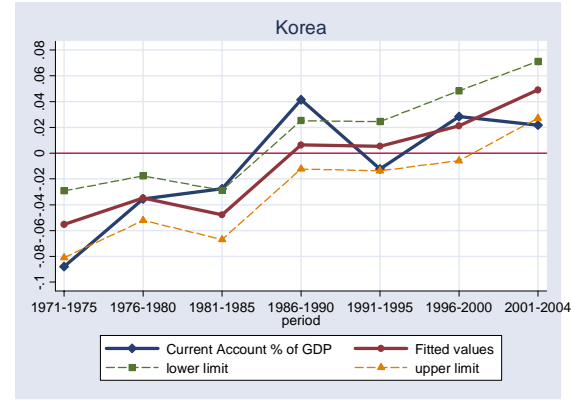
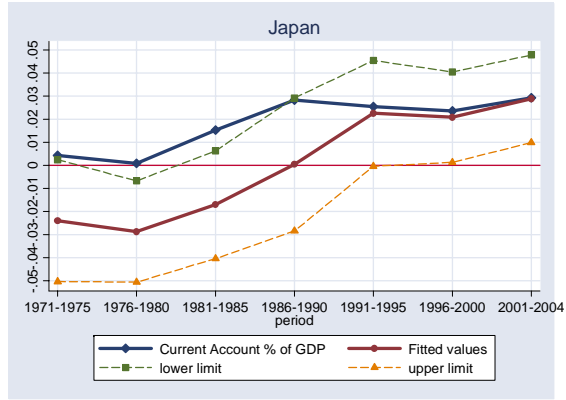
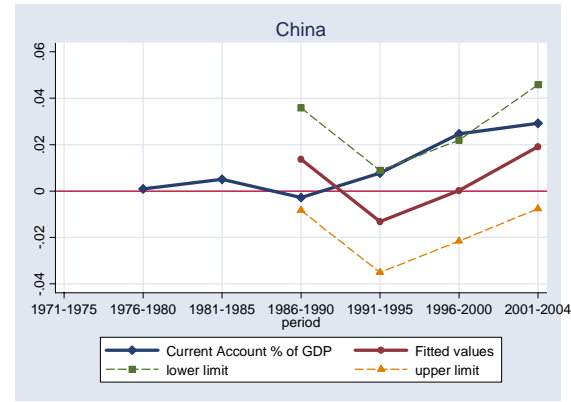
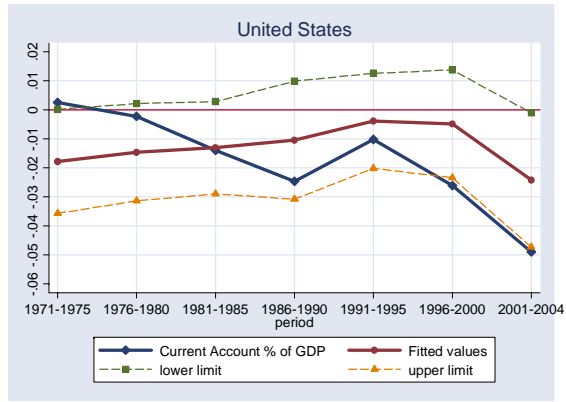


Figure 7-1: Out-of-sample Predictions of Current Account Balances with and without Institutional Variables, Industrialized Countries

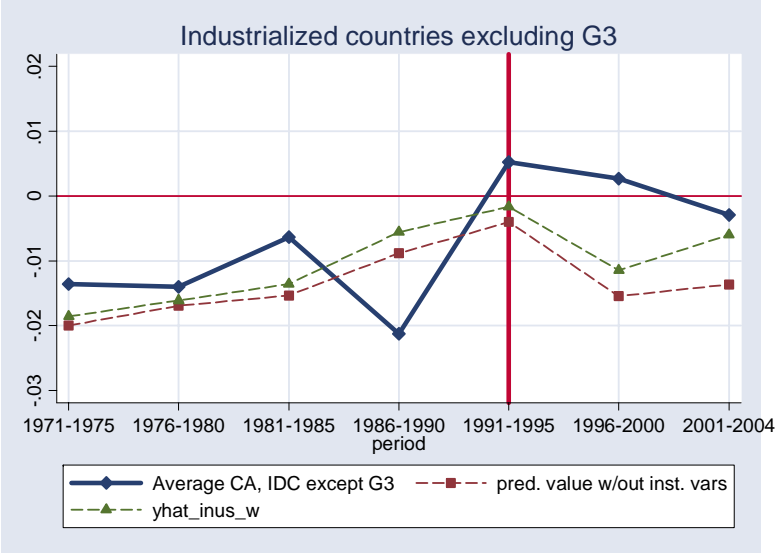
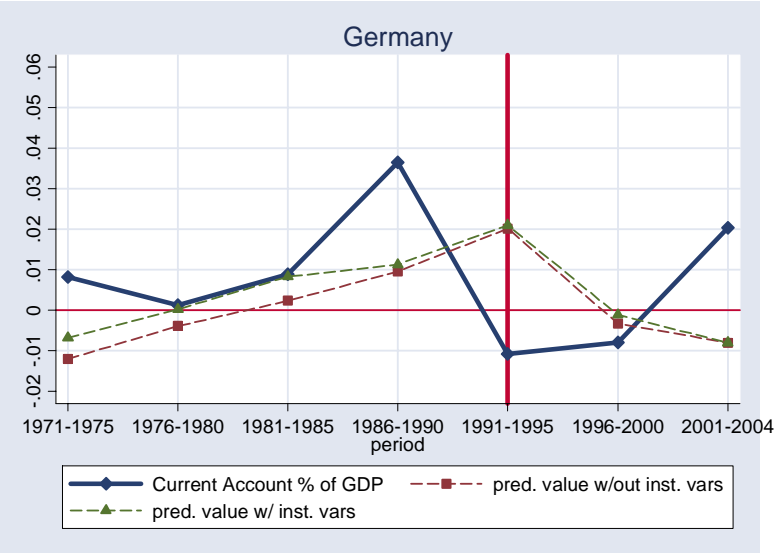
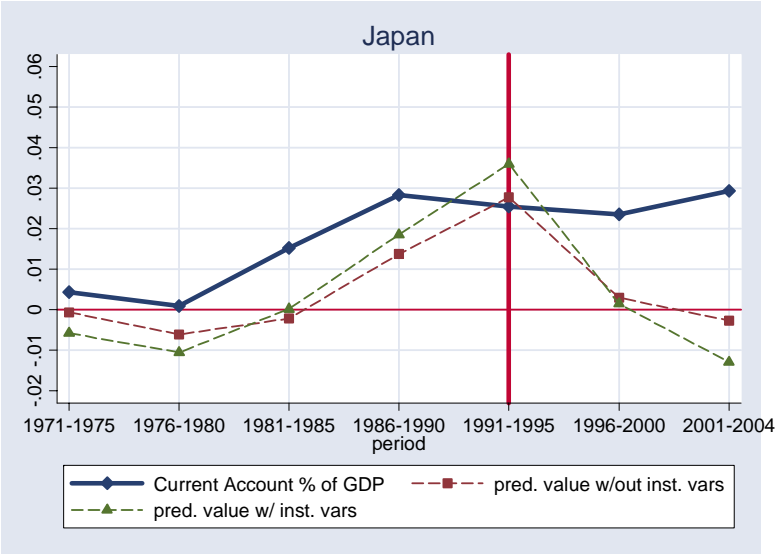
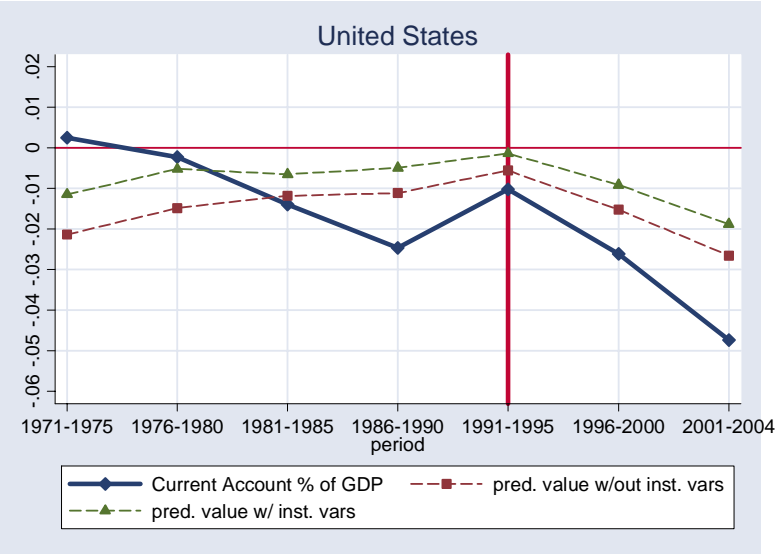


Figure 7-2: Out-of-sample Predictions of Current Account Balances with & without Institutional Variables, Less Developed Countries

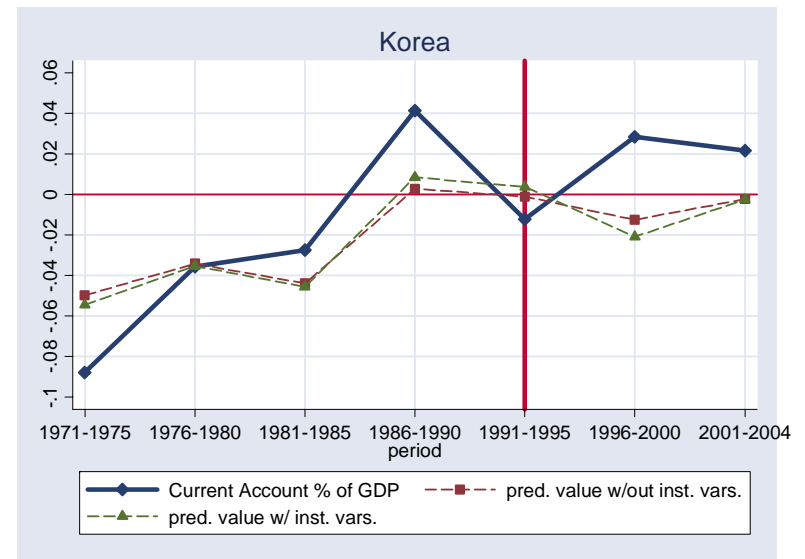
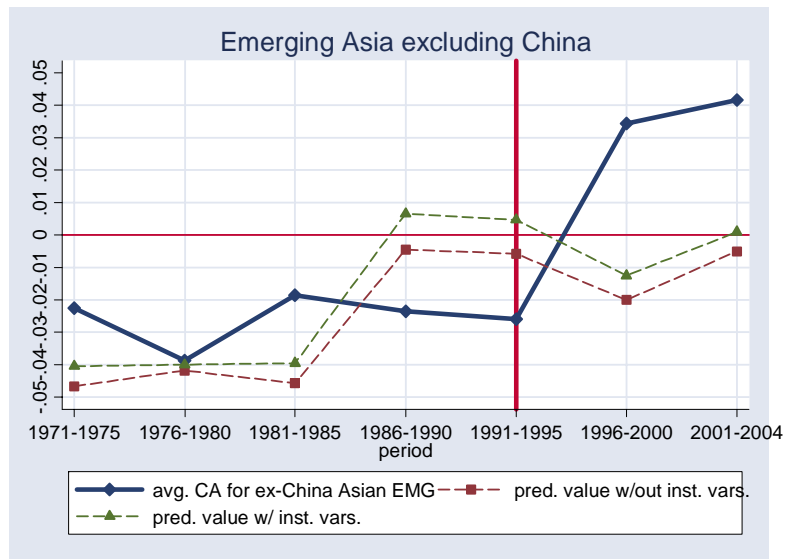
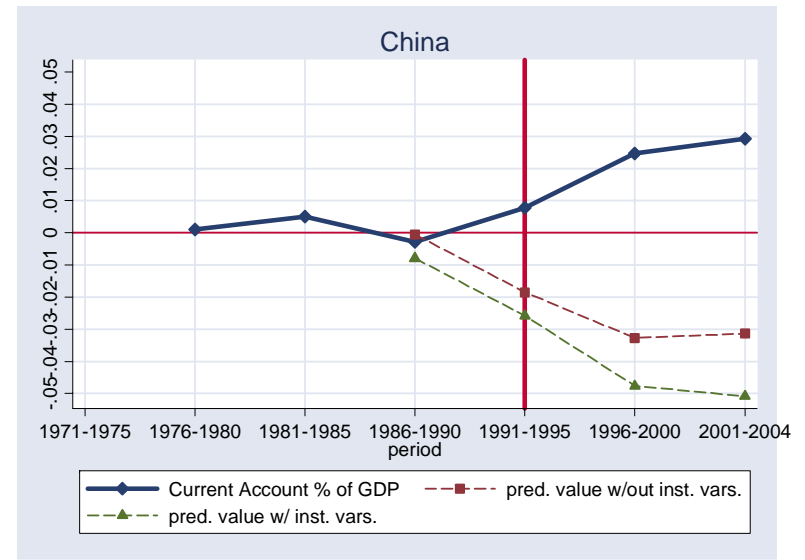
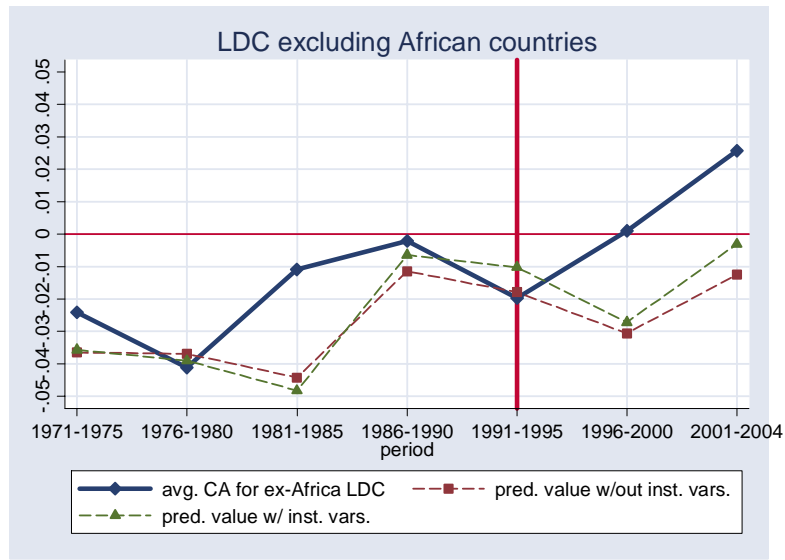


Figure 8: Prediction Errors from the Estimations with and without Institutional Variables for the 2001-04 Period (PPT)

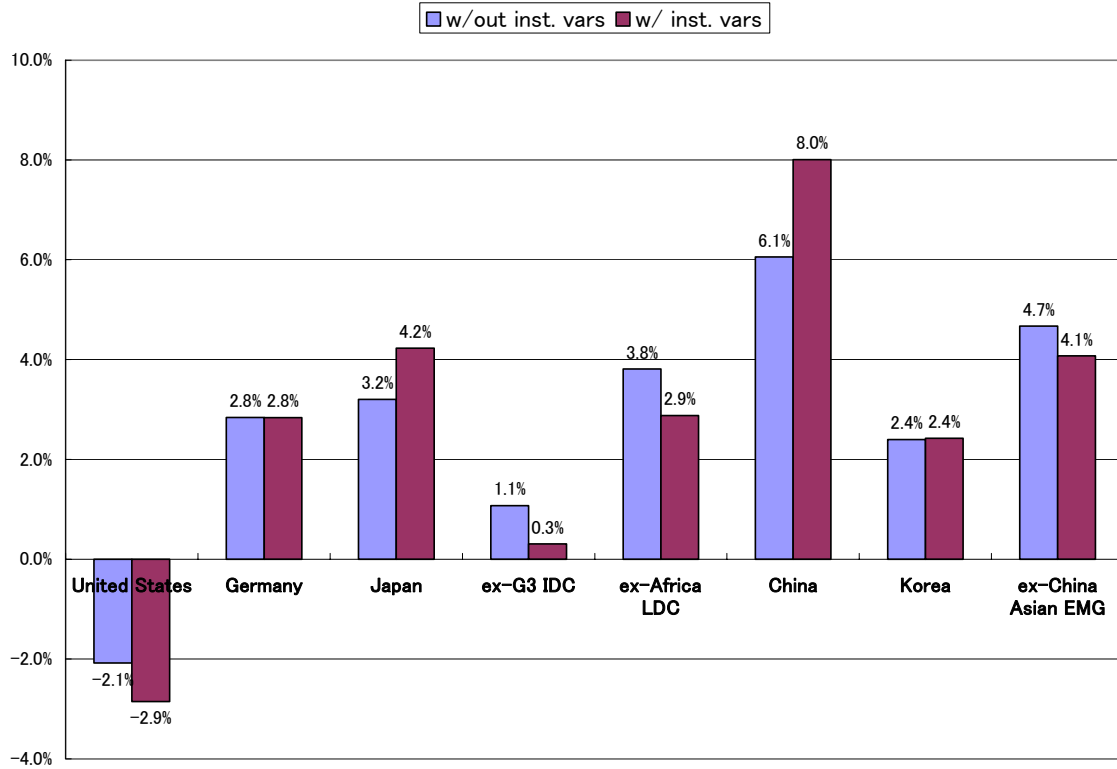


Figure 9: Out-of-sample predictions for U.S. national saving and investment

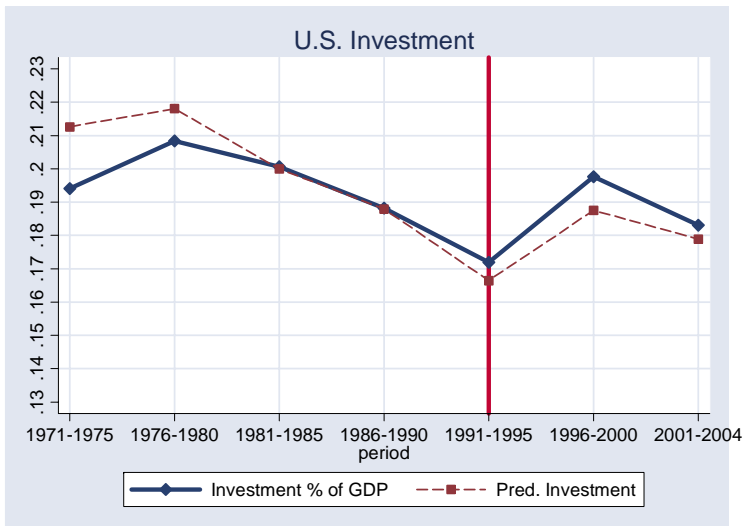
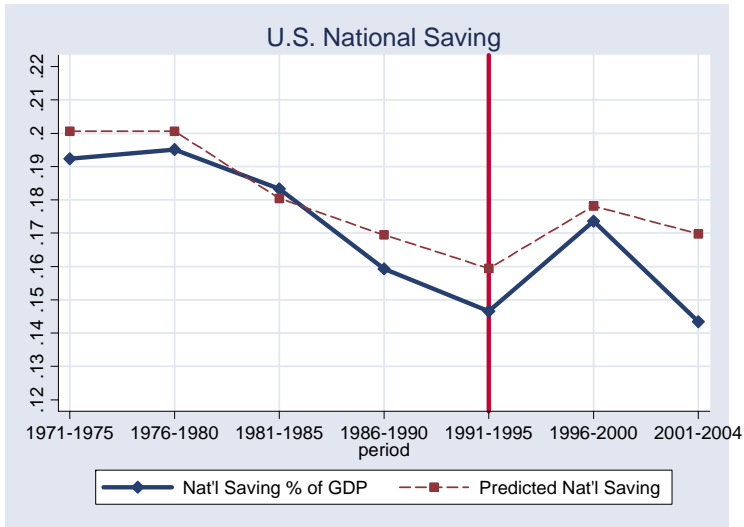


Figure 10: Out-of-sample predictions for Emerging Asia's national saving and investment (excluding China)

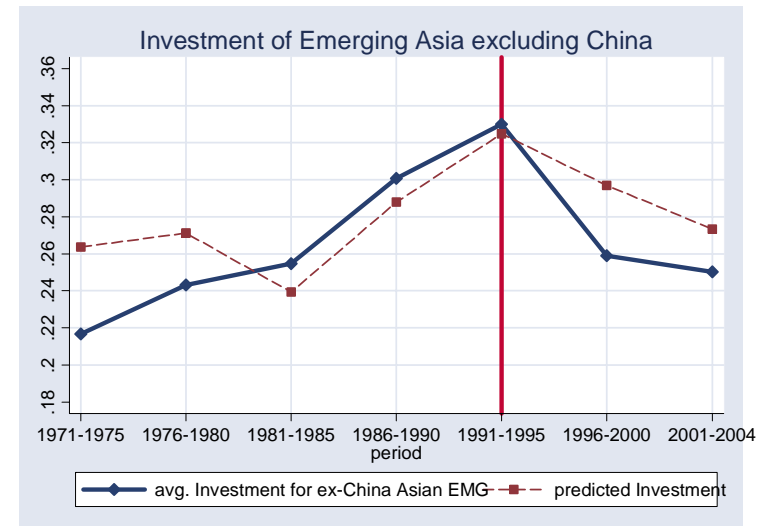
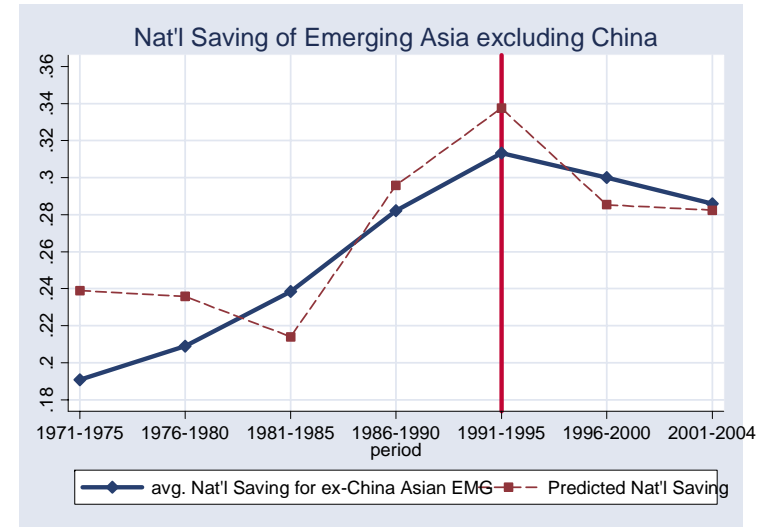
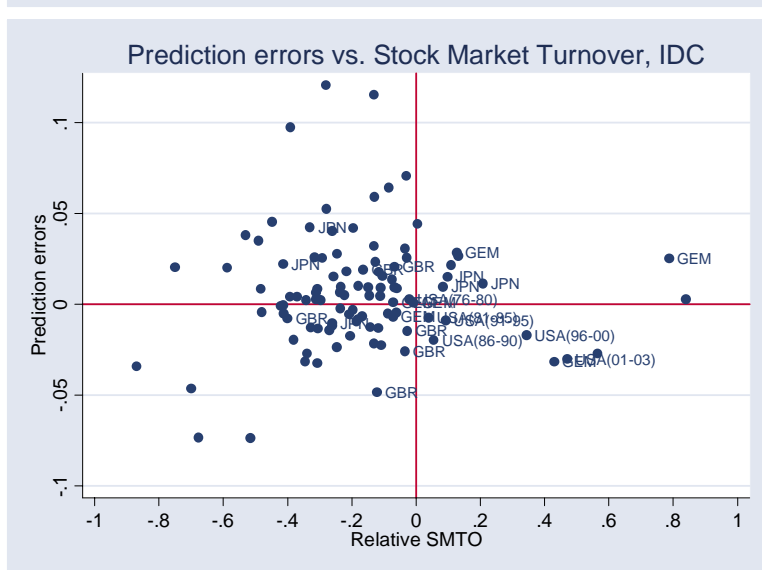
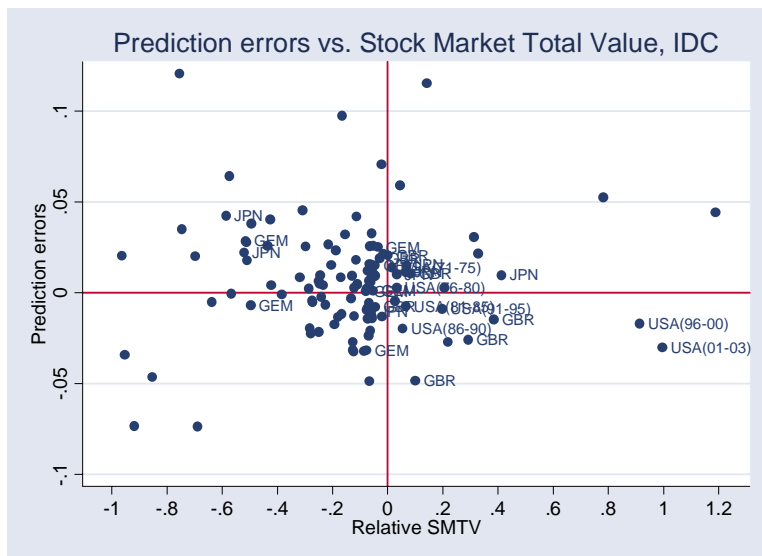


Figure 11: Out-of-Sample Prediction Errors and Equity Market Development

Industrialized countries



Asian emerging market countries

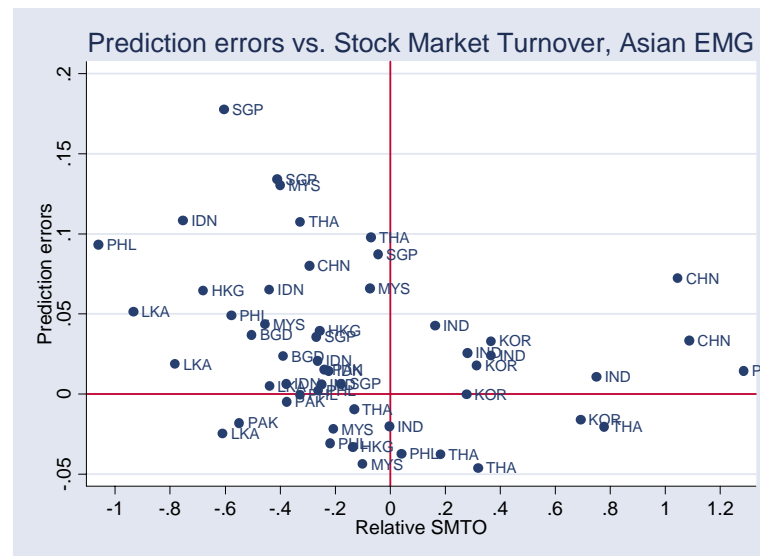
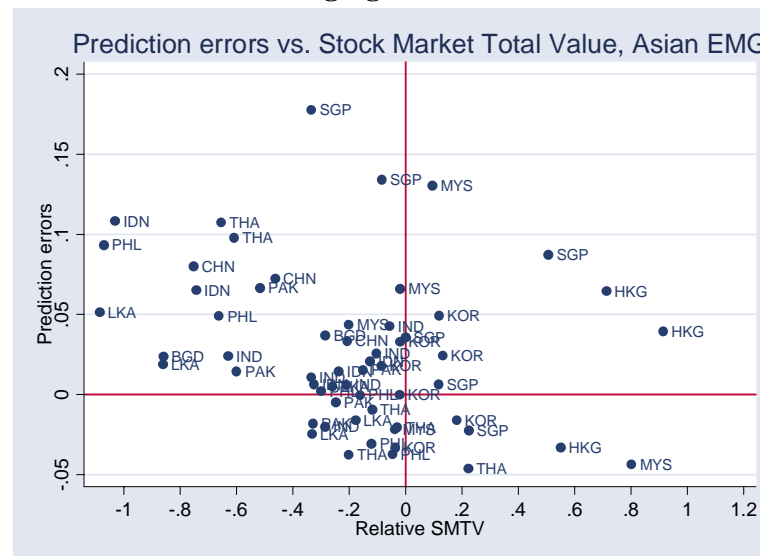


Figure 12: Prediction Errors and its Portion Explained by relative SMTV

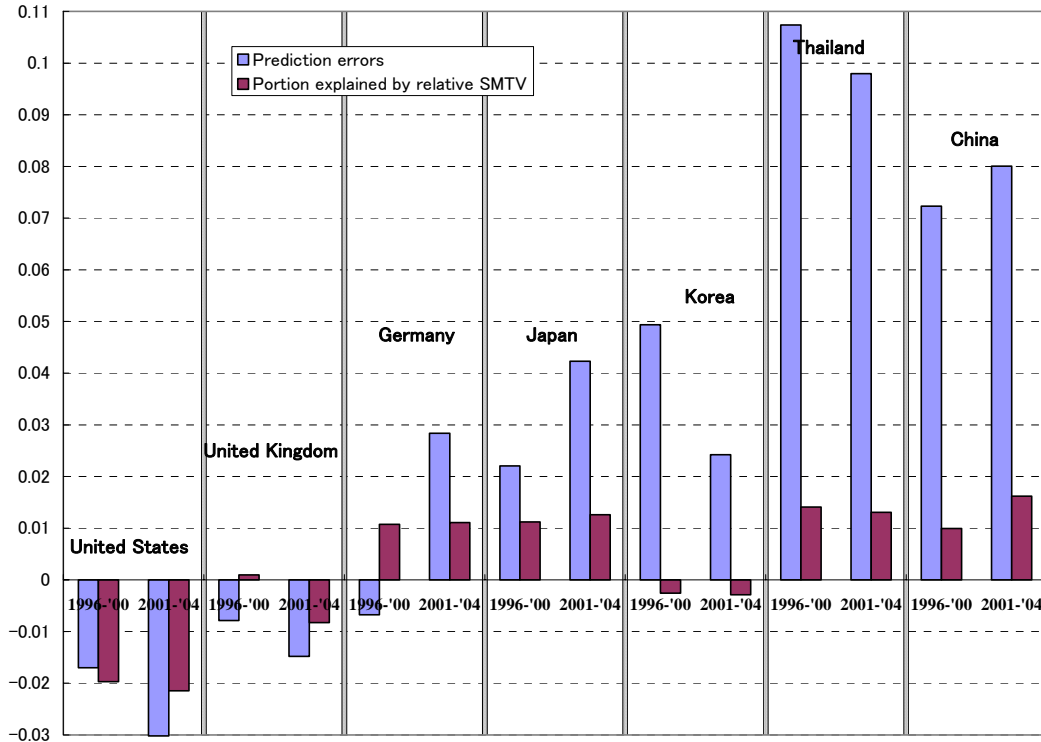


Figure 13: Out-of-Sample Prediction Errors and Housing Wealth Growth



Table 1: Current account regression *without* institutions variable

Dependent variable: 5-yr average of current account (% of GDP): 1971 – 2004					
	(1) Full	(2) IDC	(3) LDC	(4) LDC w/o Africa	(5) EMG
Gov't budget balance	0.15 [0.068]**	0.16 [0.086]*	0.15 [0.081]*	0.242 [0.092]***	0.219 [0.076]***
Net foreign assets (initial)	0.049 [0.005]***	0.063 [0.011]***	0.047 [0.005]***	0.05 [0.006]***	0.043 [0.009]***
Relative income	0.027 [0.019]	0.059 [0.025]**	0.032 [0.085]	0.09 [0.090]	0.1 [0.082]
Relative income squared	0.016 [0.029]	-0.212 [0.080]***	0.008 [0.096]	0.118 [0.105]	0.073 [0.092]
Rel. dependency ratio (young)	-0.06 [0.020]***	0.021 [0.073]	-0.071 [0.025]***	-0.075 [0.025]***	-0.013 [0.022]
Rel. dependency ratio (old)	-0.205 [0.061]***	0.001 [0.081]	-0.313 [0.093]***	-0.241 [0.098]**	-0.347 [0.106]***
Financial deepening (PCGDP)	0.001 [0.008]	-0.006 [0.010]	0.005 [0.013]	0.013 [0.014]	0.003 [0.013]
TOT volatility	-0.013 [0.019]	0.063 [0.058]	-0.017 [0.020]	-0.006 [0.018]	-0.016 [0.019]
Avg. GDP growth	-0.151 [0.141]	-0.101 [0.207]	-0.161 [0.155]	-0.145 [0.117]	-0.187 [0.115]
Trade openness	0.003 [0.009]	0.037 [0.011]***	-0.003 [0.010]	-0.008 [0.011]	-0.005 [0.010]
Oil exporting countries	0.046 [0.013]***	– –	0.047 [0.013]***	0.039 [0.011]***	0.028 [0.013]**
Observations	502	132	370	235	210
Adjusted R-squared	0.42	0.50	0.39	0.53	0.49

Robust standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%
The estimated coefficients for the time-fixed dummies and constant are not shown.

Table 2-1: Current account regression with legal development (*LEGAL*)

Dependent variable: 5-yr average of current account (% of GDP): 1971 – 2004					
	(1)	(2)	(3)	(4)	(5)
	Full	IDC	LDC	LDC w/o Africa	EMG
Gov't budget balance	0.159 [0.065]**	0.154 [0.095]*	0.168 [0.079]**	0.251 [0.091]***	0.23 [0.075]***
Net foreign assets (initial)	0.049 [0.005]***	0.069 [0.011]***	0.047 [0.005]***	0.051 [0.006]***	0.041 [0.009]***
Relative income	0.062 [0.028]**	0.058 [0.028]**	0.115 [0.096]	0.16 [0.106]	0.216 [0.103]**
Relative income squared	0.032 [0.038]	-0.097 [0.120]	0.057 [0.102]	0.157 [0.121]	0.166 [0.111]
Rel. dependency ratio (young)	-0.061 [0.018]***	-0.027 [0.082]	-0.076 [0.022]***	-0.099 [0.030]***	-0.044 [0.023]*
Rel. dependency ratio (old)	-0.2 [0.058]***	0.099 [0.098]	-0.368 [0.096]***	-0.331 [0.114]***	-0.529 [0.127]***
Financial Develop. (PCGDP)	-0.008 [0.009]	0.01 [0.012]	-0.043 [0.032]	-0.038 [0.040]	-0.082 [0.038]**
Legal development (<i>LEGAL</i>)	-0.003 [0.004]	0.002 [0.007]	-0.017 [0.008]**	-0.02 [0.009]**	-0.018 [0.010]*
PCGDP x <i>LEGAL</i>	-0.003 [0.004]	-0.035 [0.015]**	-0.021 [0.011]*	-0.025 [0.012]**	-0.037 [0.016]**
Financial open. (KAOPEN)	-0.001 [0.003]	-0.002 [0.003]	0.002 [0.007]	0.005 [0.008]	0.008 [0.010]
KAOPEN x <i>LEGAL</i>	0.002 [0.001]*	0.012 [0.003]***	0.002 [0.002]	0.002 [0.002]	0.005 [0.003]
KAOPEN x PCGDP	-0.003 [0.005]	0.002 [0.009]	0 [0.007]	0.002 [0.008]	-0.002 [0.009]
TOT volatility	-0.013 [0.017]	0.1 [0.054]*	-0.015 [0.018]	-0.002 [0.019]	-0.003 [0.022]
Avg. GDP growth	-0.123 [0.087]	-0.036 [0.243]	-0.09 [0.096]	-0.107 [0.124]	-0.132 [0.118]
Trade openness	0.006 [0.009]	0.046 [0.014]***	0.005 [0.013]	0 [0.014]	0.004 [0.014]
Oil exporting countries	0.041 [0.013]***	– –	0.04 [0.013]***	0.035 [0.012]***	0.025 [0.013]*
Observations	471	126	345	234	203
Adjusted R-squared	0.47	0.55	0.46	0.54	0.51

Robust standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%
The estimated coefficients for the time-fixed dummies and constant are not shown.

Table 2-2: National saving regression with legal development (LEGAL)

Dependent variable: 5-yr average of national saving (% of GDP): 1971 – 2004					
	(1)	(2)	(3)	(4)	(5)
	Full	IDC	LDC	LDC w/o Africa	EMG
Gov't budget balance	0.134 [0.061]**	0.233 [0.096]**	0.094 [0.062]	0.038 [0.093]	0.204 [0.079]**
Net foreign assets (initial)	0.049 [0.008]***	0.059 [0.011]***	0.054 [0.007]***	0.053 [0.010]***	0.052 [0.010]***
Relative income	0.014 [0.038]	-0.047 [0.028]	-0.188 [0.093]**	-0.142 [0.100]	-0.185 [0.110]*
Relative income squared	-0.085 [0.053]	0.017 [0.127]	-0.325 [0.105]***	-0.159 [0.122]	-0.306 [0.124]**
Rel. dependency ratio (young)	-0.178 [0.024]***	-0.365 [0.076]***	-0.173 [0.025]***	-0.21 [0.037]***	-0.108 [0.028]***
Rel. dependency ratio (old)	-0.529 [0.076]***	-0.305 [0.100]***	-0.793 [0.122]***	-0.746 [0.126]***	-0.668 [0.173]***
Financial Develop. (PCGDP)	0.03 [0.014]**	0.041 [0.015]***	-0.02 [0.042]	0.05 [0.046]	-0.027 [0.043]
Legal development (LEGAL)	-0.008 [0.006]	0.006 [0.007]	-0.03 [0.010]***	-0.019 [0.011]*	-0.027 [0.015]*
PCGDP x LEGAL	-0.006 [0.007]	-0.04 [0.016]**	-0.032 [0.015]**	-0.02 [0.016]	-0.037 [0.020]*
Financial open. (KAOPEN)	-0.012 [0.004]***	-0.015 [0.004]***	-0.01 [0.008]	0.001 [0.009]	0.006 [0.011]
KAOPEN x LEGAL	-0.002 [0.001]	0.011 [0.003]***	-0.002 [0.003]	-0.001 [0.003]	0.001 [0.004]
KAOPEN x PCGDP	-0.008 [0.007]	0.007 [0.011]	-0.004 [0.008]	0.007 [0.010]	-0.002 [0.011]
TOT volatility	-0.011 [0.026]	0.433 [0.062]***	-0.045 [0.025]*	-0.018 [0.026]	-0.07 [0.029]**
Avg. GDP growth	0.867 [0.113]***	0.351 [0.239]	0.937 [0.116]***	0.868 [0.130]***	0.998 [0.131]***
Trade openness	0.03 [0.009]***	0.079 [0.013]***	0.049 [0.013]***	0.025 [0.013]*	0.029 [0.015]*
Oil exporting countries	0.103 [0.016]***	– –	0.104 [0.017]***	0.097 [0.024]***	0.06 [0.020]***
Observations	470	126	344	234	203
Adjusted R-squared	0.63	0.66	0.67	0.69	0.67

Robust standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%
The estimated coefficients for the time-fixed dummies and constant are not shown.

Table 2-3: Investment regression with legal development (*LEGAL*)

Dependent variable: 5-yr average of Investment (% of GDP): 1971 – 2004					
	(1)	(2)	(3)	(4)	(5)
	Full	IDC	LDC	LDC w/o Africa	EMG
Gov't budget balance	-0.034 [0.039]	0.093 [0.081]	-0.082 [0.049]*	-0.165 [0.059]***	-0.137 [0.063]**
Net foreign assets (initial)	-0.008 [0.004]*	0.004 [0.007]	-0.005 [0.004]	-0.009 [0.006]	-0.001 [0.009]
Relative income	-0.041 [0.023]*	-0.118 [0.019]***	-0.242 [0.086]***	-0.233 [0.090]**	-0.303 [0.096]***
Relative income squared	-0.136 [0.036]***	0.14 [0.087]	-0.335 [0.093]***	-0.288 [0.102]***	-0.399 [0.107]***
Rel. dependency ratio (young)	-0.08 [0.019]***	-0.393 [0.062]***	-0.046 [0.021]**	-0.058 [0.029]**	-0.062 [0.026]**
Rel. dependency ratio (old)	-0.309 [0.062]***	-0.419 [0.071]***	-0.245 [0.106]**	-0.329 [0.116]***	-0.111 [0.135]
Financial Develop. (PCGDP)	0.046 [0.009]***	0.041 [0.008]***	0.067 [0.034]**	0.111 [0.041]***	0.054 [0.038]
Legal development (<i>LEGAL</i>)	0.002 [0.004]	0.001 [0.005]	0.009 [0.009]	0.019 [0.009]**	-0.01 [0.014]
PCGDP x <i>LEGAL</i>	0.008 [0.005]	-0.016 [0.010]	0.018 [0.012]	0.029 [0.015]*	0.002 [0.018]
Financial Open. (<i>KAOPEN</i>)	-0.014 [0.003]***	-0.01 [0.003]***	-0.016 [0.007]**	-0.014 [0.008]*	-0.01 [0.008]
<i>KAOPEN</i> x <i>LEGAL</i>	-0.002 [0.001]**	-0.006 [0.003]**	-0.002 [0.002]	-0.002 [0.002]	-0.004 [0.003]
<i>KAOPEN</i> x PCGDP	-0.012 [0.005]**	-0.005 [0.008]	-0.017 [0.007]**	-0.012 [0.008]	-0.008 [0.009]
TOT volatility	0.016 [0.021]	0.277 [0.043]***	-0.017 [0.021]	0.002 [0.021]	-0.044 [0.023]*
Avg. GDP growth	0.964 [0.092]***	0.467 [0.169]***	0.982 [0.096]***	0.871 [0.103]***	1.116 [0.123]***
Trade Openness	0.024 [0.007]***	0.02 [0.010]*	0.035 [0.010]***	0.025 [0.010]**	0.035 [0.011]***
Oil exporting countries	0.067 [0.013]***	– –	0.072 [0.013]***	0.062 [0.019]***	0.048 [0.016]***
Observations	470	126	344	234	203
Adjusted R-squared	0.52	0.75	0.55	0.57	0.65

Robust standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%
The estimated coefficients for the time-fixed dummies and constant are not shown.

Table 3: Total Effects of a 10% increase in Financial Development (*PCGDP*) conditional on legal development and financial openness

A. Current Account

Industrialized countries		KAOPEN [0, 4.38]		
		Low 10 percentile (3.55)	Mean (4.22)	High 10 percentile (4.38)
LEGAL [0, 6.51]	Low 10 percentile (4.37)	0.365	0.379	0.382
	Mean (5.69)	-0.095	-0.082	-0.079
	High 10 percentile (6.47)	-0.370	-0.357	-0.354

Less developed countries		KAOPEN [0, 4.38]		
		Low 10 percentile (0.66)	Mean (1.82)	High 10 percentile (4.08)
LEGAL [0, 6.51]	Low 10 percentile (1.15)	0.408	0.408	0.408
	Mean (2.48)	0.127	0.127	0.127
	High 10 percentile (3.89)	-0.167	-0.167	-0.167

Asian Emerging market countries		KAOPEN [0, 4.38]		
		Low 10 percentile (0.66)	Mean (1.90)	High 10 percentile (3.96)
LEGAL [0, 6.51]	Low 10 percentile (1.66)	0.528	0.503	0.462
	Mean (2.96)	0.058	0.033	-0.008
	High 10 percentile (4.50)	-0.523	-0.548	-0.589

B. National Saving

Industrialized countries		KAOPEN [0, 4.38]		
		Low 10 percentile (3.55)	Mean (4.22)	High 10 percentile (4.38)
LEGAL [0, 6.51]	Low 10 percentile (4.37)	0.606	0.653	0.664
	Mean (5.69)	0.079	0.127	0.137
	High 10 percentile (6.47)	-0.235	-0.187	-0.177

Less developed countries		KAOPEN [0, 4.38]		
		Low 10 percentile (0.66)	Mean (1.82)	High 10 percentile (4.08)
LEGAL [0, 6.51]	Low 10 percentile (1.15)	1.257	1.210	1.120
	Mean (2.48)	0.828	0.782	0.691
	High 10 percentile (3.89)	0.380	0.333	0.243

Asian Emerging market countries		KAOPEN [0, 4.38]		
		Low 10 percentile (0.66)	Mean (1.90)	High 10 percentile (3.96)
LEGAL [0, 6.51]	Low 10 percentile (1.66)	1.106	1.081	1.040
	Mean (2.96)	0.636	0.611	0.570
	High 10 percentile (4.50)	0.055	0.031	-0.011

(Table 3 continued)

C. Investment

Asian Industrialized countries		KAOPEN [0, 4.38]		
		Low 10 percentile (3.55)	Mean (4.22)	High 10 percentile (4.38)
LEGAL [0, 6.51]	Low 10 percentile (4.37)	0.612	0.579	0.571
	Mean (5.69)	0.402	0.368	0.360
	High 10 percentile (6.47)	0.276	0.242	0.235
Less developed countries		KAOPEN [0, 4.38]		
		Low 10 percentile (0.66)	Mean (1.82)	High 10 percentile (4.08)
LEGAL [0, 6.51]	Low 10 percentile (1.15)	0.713	0.515	0.131
	Mean (2.48)	0.954	0.756	0.372
	High 10 percentile (3.89)	1.206	1.009	0.624
Asian Emerging market countries		KAOPEN [0, 4.38]		
		Low 10 percentile (0.66)	Mean (1.90)	High 10 percentile (3.96)
LEGAL [0, 6.51]	Low 10 percentile (1.66)	0.829	0.729	0.565
	Mean (2.96)	0.854	0.755	0.590
	High 10 percentile (4.50)	0.886	0.786	0.621

D: Matrix for Emerging Asia

		KAOPEN		
		Low 10 percentile (0.66)	Mean (1.90)	High 10 percentile (3.96)
LEGAL	Low 10 percentile (1.66)	Bangladesh	Indonesia, Philippines, Sri Lanka	
	Mean (2.93)	China	India, Korea, Malaysia, Thailand, ex-China EA	
	High 10 percentile (4.50)			Hong Kong, Singapore

Table 4: Estimated coefficients on the government budget balance (% of GDP) in different model specifications

Dep. var.	Model Specifications	IDC	LDC	EMG
(a) Current Account				
	(1) 2SLS – IV w/out inst. vars	0.325	-0.004	0.184
	(2) 2SLS – IV w/ inst. vars	0.448	0.209 ^{17%}	0.378
	(3) HP – OLS w/ inst. vars	0.095	0.103	0.178
	(4) HP – FE	0.485	0.306	0.180
	(5) HP – GLS w/out inst. vars	0.375	0.099	0.129
	(6) HP – GLS w/ inst. vars	0.326	0.166	0.229
(b) National Saving				
	(1) 2SLS – IV w/out inst. vars	0.808	-0.606	-0.445
	(2) 2SLS – IV w/ inst. vars	0.667	-0.063	-0.211
	(3) HP – OLS w/ inst. vars	0.171	0.033	0.190
	(4) HP – FE	0.316	0.339	0.083
	(5) HP – GLS w/out inst. vars	0.222	0.031	0.090
	(6) HP – GLS w/ inst. vars	0.227	0.022	0.074
(c) Investment				
	(1) 2SLS – IV w/out inst. vars	0.554	-0.466	-0.458
	(2) 2SLS – IV w/ inst. vars	0.272 ^{18%}	-0.33	-0.431
	(3) HP – OLS w/ inst. vars	0.093	-0.054	-0.096
	(4) HP – FE	-0.085	0.005	-0.181
	(5) HP – GLS w/out inst. vars	0.009	-0.122	-0.133
	(5) HP – GLS w/ inst. vars	0.067	-0.176	-0.214

NOTES: Bold figures denotes significant at the 10% level.

(1) “2SLS – IV w/out inst. vars” refers to the 2SLS model applied to the five-year panel data, instrumented with the instrumental variables of the dummy for the left-wing government (LEFT) from the World Bank’s Database of Political Institutions (DPI 2004); military spending as a ratio to GDP (MILEXP) from the Stockholm International Peace Research Institute (SIPRI); yearly changes in unemployment rates (D_U); and regional dummies, but does not include “institutional variables” mentioned in the text. (2) “2SLS – IV w/ inst. vars” is a five-year panel model instrumented with the same IVs, but does include the institutional variables. (3) “HP – OLS w/ inst. vars” refers to the OLS model applied to a set of RHS variables that include variables detrended with HP-filter. (4) “HP – FE” refers to the fixed effects model applied to a set of RHS variables that include variables annual HP-filtered data, but not institutional and interaction terms. (5) “HP – GLS w/out inst. vars” refers to the GLS model applied to a set of RHS variables that include HP-filtered variables, but no institutional variables and interaction terms. (6) “HP – GLS w/ inst. vars” refers to the GLS model applied to a set of RHS variables that include HP-filtered variables, institutional variables, and their interaction terms.

Table 5: Effect of Equity Market Development on the Out-of-Sample Prediction Errors

Dependent variable: Out-of-sample prediction errors			
	(1)	(2)	(3)
	<i>SMTV</i>	<i>SMT0</i>	<i>SMKC</i>
Equity Market Development	-0.021 [0.005]***	-0.008 [0.008]	-0.014 [0.006]**
West Hemisphere	-0.007 [0.005]	-0.015 [0.005]***	-0.012 [0.005]**
Middle East	0.001 [0.007]	0.005 [0.007]	0.005 [0.007]
Asia	0.012 [0.005]**	0.014 [0.006]**	0.015 [0.005]***
Africa	0.003 [0.008]	0.007 [0.009]	0.016 [0.010]
Fix2000	0.006 [0.005]	0.008 [0.005]	0.009 [0.005]*
Fix2004	0.008 [0.006]	0.009 [0.009]	0.009 [0.009]
Constant	0.001 [0.003]	0.002 [0.004]	0.000 [0.004]
Observations	325	299	298
Adjusted R-squared	0.29	0.25	0.27

* significant at 10%; ** significant at 5%; *** significant at 1%

NOTE: The regression is performed with the weights based on the ratio of GDP in U.S. dollars.