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The Evolution of Asian Financial Linkages: Key Determinants and the Role of Policy

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The Evolution of Asian Financial Linkages: Key Determinants and the Role of Policy

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Abstract

This paper examines how Asian financial linkages with systemic economies have changed over time. After developing a factor model, it estimates Asian financial sensitivities to systemic economies, and then seeks to uncover their key determinants, which include trade and financial linkages, as well as policies. In line with Asia's growing role in the global economy—including through deeper financial integration—regional financial markets have become more sensitive to systemic economies. Asian financial sensitivities to systemic economies exhibit cyclical fluctuations, and reached historically high levels during the latest global financial crisis of 2008–09. While macroeconomic policy frameworks have helped Asian economies cope well with market turbulence, they cannot completely insulate Asian financial markets against major global financial shocks.

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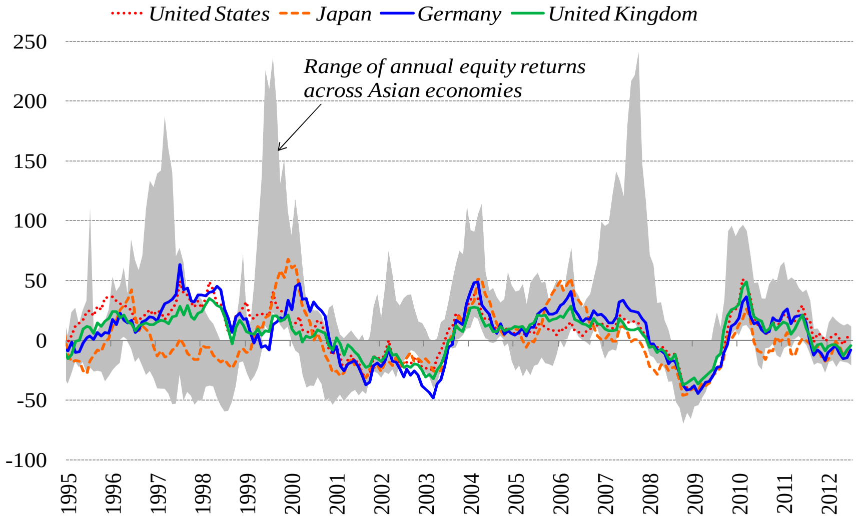
Contents Page

I. INTRODUCTION

Uncertainty continues to shroud the global economic and financial outlook. Downside risks, most obviously stemming from the euro area, remain a concern for Asia, because developments in major global financial centers tend to have large effects on Asian financial markets. In particular, equity returns in Asian economies seem generally to move in tandem with those in systemic economies, including, for example France, Germany, Japan, the United Kingdom, and the United States (**Figure 1**).

Figure 1. Equity Returns: Selected Systemic Economies and Asia

(In percent over 12 months)



Sources: Thomson Reuters Datastream; and authors' calculations.

This paper attempts to provide a positive analysis of the underlying determinants of these financial linkages, or financial "betas", in Asia. The objective is to measure how the strength of these linkages varies across time and countries, and to understand the causes of these changes. Normative implications of movements in beta however are not obvious *a priori*. For example, a secular uptrend in beta (if any) may bring welfare gains associated with greater trade and financial integration, while at the same time increasing exposure to financial shocks. Likewise, movements in betas over the business cycle could reflect (welfare-enhancing) international risk sharing through financial markets, (welfare-reducing) financial contagion, or a combination of both – see Rungcharoenkitkul (2011) for an empirical evaluation of the tradeoffs between the risk-sharing benefits and the spillovers costs of financial integration. Such welfare discussion lies beyond the scope of this paper.

Against this backdrop, this paper focuses on the following questions:

- How has the sensitivity of Asian financial markets to systemic economies varied across economies and over time?

- How important are real and financial linkages with systemic economies in explaining Asian financial market fluctuations?

- To what extent can macroeconomic policies help mitigate financial market spillovers?

To explore the evolution of Asian financial linkages, an extended version of the Capital Asset Pricing Model (CAPM) is used. Building upon the studies of Bekaert and others (2011), Forbes and Chinn (2004), and Balakrishnan and others (2009), two complementary approaches are utilized. One approach primarily focuses on the time averages of betas, and provides an analysis of more permanent differences in betas across Asia. The other econometric approach delves deeper into understanding time series fluctuations of betas using a larger set of countries. These two approaches provide different perspectives on the interplay between the key determinants (including the role of policies) and the changing nature of financial linkages in Asia.

The analysis yields three main conclusions:

- In line with Asia's growing role in the global economy—including through deeper financial integration—regional financial markets have become more sensitive to systemic economies.

- Asian financial sensitivities to systemic economies exhibit cyclical fluctuations which correspond to tranquil and turbulent periods across international capital markets. These financial sensitivities reached historically high levels during the latest global financial crisis.

- Macroeconomic policies—including those designed to lower government debt and increase international reserves (up to a limit)—can reduce Asia's sensitivity to financial spillovers from systemic economies even after global factors and other economy-specific characteristics are accounted for. While macroeconomic policies can limit financial sensitivities during both tranquil and turbulent periods, they cannot completely insulate Asian financial markets against major global financial shocks.

The organization of the rest of the paper is as follows. Section II presents the conceptual framework and the econometric methodology. Section III discusses the main results, which is followed by the conclusion.

II. Model and Estimation Framework

This section describes the modeling framework used to estimate the strength of financial linkages between Asian and systemic economies, as well as their key determinants, including the role of policies. To do so, two complementary approaches are used, both which build on the Capital Asset Pricing Model (CAPM). While one of the approaches focuses more on cross-country differences within Asia, the other approaches concentrates primarily on how the empirical relationships have changed over time taking into consideration a larger set of economies. These differing perspectives highlight the role of policies, but also serve to assess the robustness of the main findings.

A. Approach I: Focusing on Cross-Sectional Variation

The first approach is based on a two-stage modeling framework used to estimate the importance of Asian financial linkages with systemic economies. In the first stage, a factor model of equity market returns is estimated, controlling for global factors. This first stage yields estimates of Asian financial (equity market) sensitivities to systemic economies. In other words, the first stage generates estimated factor loadings, also known as “betas”. In the second stage, the estimated cross-country factor loadings (betas) are decomposed into trade and financial bilateral linkages between Asian and systemic economies. In addition, the importance of macroeconomic policies is assessed.

This first approach builds on the literature in several directions. The empirical strategy extends the framework developed by Forbes and Chinn (2004), most importantly by seeking to investigate the role of macroeconomic policies. It is closely related to other studies focusing on financial spillovers including Balakrishnan and others (2009) and IMF (2009). It builds upon other studies by controlling for various global factors including world economic activity, given its importance for Asian trade, and proxies for international investor risk aversion because of its relevance for capital flows. Furthermore, in addition to the use of country-specific fixed effects (to account for differences across economies that may not be captured by the observable variables considered), standard errors are corrected for any potential clustering owing to the fact that equity returns across systemic economies may not be independent of each other (even after controlling for global equity returns).

The First Stage

Equity returns in two economies could move in tandem for at least two reasons. First, returns in these economies may be synchronized because shocks to a systemic economy are transmitted to Asian economies through cross-country linkages, such as for example bilateral trade, bank lending, or investment flows. Second, returns in both economies could be affected by global shocks, such as changes in global economic activity, world interest rates, global stock markets, risk aversion of international investors, and commodity prices.

Therefore, in order to isolate the importance of cross-country equity market linkages, the factor model used in the first stage—which could be thought of as an extended CAPM—controls for several global factors. The model also allows market returns in each economy to be determined by a economy-specific effect. For each Asian economy i, equity market returns $r_{i,t}$ at each time t is thus expressed as follows:

$$r_{i,t} = \alpha_i + \sum_{c=1}^{C} \beta_{i,c} r_{c,t} + \sum_{g=1}^{G} \gamma_{i,g} Z_{g,t} + e_{it}$$

where the intercept is a economy-specific effect, and while the error term is assumed to be normally distributed, these errors are not necessarily independent across economies. In this approach, therefore, the factor loadings, $\beta_{i,c}$, are assumed to be constant for each economy (over the designated sample period), but can vary across economies. The goal of this approach is to exploit this cross-sectional variation within Asia as much as possible. In what follows, five systemic countries are considered: France, Germany, Japan, the United Kingdom, and the United States ($C=5$). In addition, five global factors are incorporated in the specification above ($G=5$): global commodity price fluctuations, global growth, global equity market returns, international interest rates, and the Chicago Board Options Exchange Market Volatility Index (VIX). The factors try to capture global business cycle and financial conditions, as well as risk aversion.[2]

Data

The data used in the first stage are relatively standard. Equity returns are computed using the equity indices compiled by Morgan Stanley Capital International (MSCI) and computed as monthly logarithmic differences. These returns are calculated for the five systemic economies, and 12 Asian economies (Japan is not included since it is treated as a systemic economy, and Vietnamese data were deemed insufficiently long for robust statistical inference): Australia, New Zealand (sometimes grouped together), Indonesia, Malaysia, the Philippines, Thailand, and Singapore (sometimes grouped as "ASEAN"), Hong Kong SAR, Korea, and Taiwan, Province of China (sometimes grouped as East Asia, excluding China), China, and India. As for the global factors, to exploit as much as possible the information contained in the monthly return series, the global business cycle was proxied using a measure of global industrial production (the PPP-weighted average of industrial production of the five systemic economies). World interest rates are constructed analogously. The global commodity price index is standard, and the VIX, despite being U.S.-oriented, is nonetheless taken to be a global factor. For world stock returns, the residual world stock return after controlling for the five systemic economies' returns is used to minimize multi-collinearity. Specifically, global stock market returns (using the MSCI world index) is regressed on the returns of the five systemic economies. The estimated residual is then the measure of global stock market returns. For the monthly data used, the sample starts in 1990 (but later for some countries), and ends in March 2012.

[2] The model focuses on the effect of shocks to systemic economies on Asian equity markets, rather than on estimating simultaneous equations between all economies. Feedback effects are harder to verify empirically, given limited time series data on bilateral linkages and other asset prices and the predominance of systemic financial markets. Moreover, existing correlation across equity returns in the five systemic markets is another limitation of the methodology.

Robustness

The estimated first-stage factor loadings are robust to alternative specifications. To assess the sensitivity of the estimated factor loadings, specifications which consider only four (omitting France), and three (omitting France and the United Kingdom) systemic economies were also considered. In addition, specifications with various combinations of the global factors were also estimated, including a version without any. Overall, the estimated factor loadings and their relative rankings do not change in a way that would markedly affect the main results (Appendix Table). What does affect the estimated factor loadings, however, is the sample period considered—an important aspect of this paper which is discussed further below.

The Second Stage

In the second stage, the goal is to uncover the key determinants of the estimated factor loadings ($\beta_{i,c}$). Because there are five systemic economies and 12 Asian economies, a panel of 60 estimated factor loadings is generated in the first stage. This panel has an Asian dimension to it, and a systemic economy dimension, as previously indicated with subscripts i, and c, respectively.

The second stage focuses on two main channels through which shocks to a systemic economy c could affect an Asian economy i, namely bilateral trade and financial linkages. First, shocks to systemic economy c could affect country c's demand for imports from country i. Second, shocks to systemic economy c could affect bank lending or flows of foreign investment from economy c to Asian economy i. There are obviously other channels that could link systemic and Asian economies such as portfolio investment, trade credit, or multinational exposure, but owing to data limitations, it is not feasible currently to explore these other channels more rigorously.

Sound macroeconomic policy frameworks could mitigate the impact of shocks from systemic economies. For example, international reserves could be drawn down in the case of a sudden reversal of bank lending or investment flows. In addition, fiscal stimulus could be deployed to support the economy that is hit be a severe trade shock originating from a systemic economy. At the same time, the degree of capital account openness and the exchange rate regime would not only determine the extent of how shocks are transmitted across economies, but the flexibility of the policy response.

In order to estimate the importance of the bilateral linkages and the role of macroeconomic policies, the following specification is initially considered:

$$\beta_{i,c} = \delta_0 + \delta_1 TRADE_{i,c} + \delta_2 FDI_{i,c} + \delta_3 BANK_{i,c} + \varphi POLICIES_i + e_{i,c}$$

The first three explanatory variables capture trade and financial linkages between the Asian economy i and the systemic economy c. At first glance, it might be expected that declines in systemic economies' equity markets would have negative effects on Asian economies' equity markets through each of the three bilateral linkage variables. However, this needs not be the case. Consider financial linkages: negative news about a systemic economy's growth outlook could cause negative returns in that country's equity market. This could generate a contraction in lending and investment by banks and firms based in that systemic economy as they strengthen balance sheets and prepare for the expected slowdown. The resulting contraction in lending and investment into Asian economies would be expected to have a negative effect on Asian equity markets, implying $\delta_2, \delta_3 > 0$. By contrast, if in response to the unfavorable outlook, the banks and firms in the systemic economy keep their lending and investment levels stable, but instead shift exposure away from the systemic economy and into Asia, this may have a positive impact on Asian equity markets, yielding $\delta_2, \delta_3 < 0$. In other words, the importance and signs of the coefficient estimates for the bilateral trade and financial linkage variables need to be ascertained empirically.

The equation above also tries to assess the role of macroeconomic policies for each individual Asian economy. International reserve metrics and fiscal policy indicators (including various debt and deficit metrics) are included as the main macroeconomic policy measures. The idea is to capture the notion of policy space. Intuitively, economies with lower debt levels and deficits, and higher international reserves (but up to point, owing to, among other things, quasi-fiscal costs, as discussed further below), have greater room to respond to shocks. This perceived or actual room for maneuver would likely imply that sensitivities to financial shocks stemming from systemic economies remain broadly stable. Owing to the existence of fixed exchange rate regimes and also fundamental changes to policy frameworks, measures of monetary policy space that would be consistent across Asian economies are difficult to design, and are therefore not explicitly considered, although some indirect and partial account for them is through the exchange rate regime variable.

Data

The data used in the second stage is also quite standard, but available at an annual frequency. The variable TRADE captures real linkages between Asian and systemic economies. Using the IMF's Direction of Trade Statistics (DOTS) database, total imports by a systemic economy c from Asian economy i, measured in U.S. dollars, is scaled by GDP for economy i. Two variables capture financial linkages between Asian and systemic economies: FDI and BANK.[3] The variable FDI is based on the OECD's International Direct Investment Statistics, and is measured as the total stock of foreign investment from systemic economy c in Asian

[3] Note that the general uptrend seen in the BANK and FDI time series across countries reflects in part greater financial integration and financial deepening.

economy i as a share of country i's GDP. The variable BANK is based on lending data reported by the BIS, and measured as the total stock of bank lending from systemic economy c to Asian economy i as a share of i's GDP (consolidated international claims of BIS-reporting banks in c vis-a-vis i). For policies, the stock of international reserves is scaled by GDP or M2, and fiscal variables are in percent of GDP. For the type of exchange rate regime in place and degree of capital account openness, data from Reinhart and Rogoff (2004), and Chinn and Ito (2008), respectively, are used. Higher values of the Reinhart-Rogoff and Chinn-Ito indices indicate more exchange rate flexibility and greater capital account openness, respectively.

Robustness

In the second stage, the full sample period is from 1992 to 2011. However, to both assess the robustness of the results and explore how these relationships have changed over time the sample is split into two sub-periods: 1992–01, and 2002–11. Moreover, given the bankruptcy of Lehman Brothers in 2008, the 2002–11 sample was further split into (pre- and post-bankruptcy periods) 2002–07 and 2008–11.

B. Approach II: A Deeper Investigation of Time Series Fluctuations

Financial betas can also portray important fluctuations over time at different frequencies. Potential drivers of changes in betas include, for example, low-frequency changes in the degree of financial integration and high-frequency shocks corresponding to episodes of stress in financial markets and the business cycle fluctuations. Disentangling the relative influences of these factors on the time series of financial betas is important for understanding the real-time transmission of financial shocks, fluctuations in financial linkages, and the role of policy. The second approach aims to address these issues, and also considers a larger set of economies (as discussed below).

To structurally allow for betas' changes over time, the CAPM model is modified to take the form:

$$r_{it} = \alpha_{0i} + \alpha_1 r_{it-1} + \beta_{it} r_t^{US} + e_{it}$$

$$\beta_{it} = b_0 + b_1' X_{it} + b_2' Y_t$$

The first equation is the basic CAPM relationship, where r_{it} denotes excess return of equity market i, and r_t^{US} is the excess return of the US equity market both in period t. The term $\alpha_{0i} + \alpha_1 r_{it-1}$ is used as a simple proxy for the expected excess return $E_{t-1}(r_{it})$, or expected risk premium which can differ across economies. The financial beta for country i is taken to be its sensitivity to the US market alone, a simplification that allows a closer examination of its determinants. The second beta equation expresses the scalar β_{it} as a function of observable country-specific factors X_{it} and global factors Y_t, both of which fluctuate over time.

The model's structure is similar to that of Bekaert and others (2011), which specifies a parametric model for beta. Unlike Bekaert and others (2011), this paper does not measure "contagion", defined by the authors as changes in beta that are triggered by events but cannot be explained by other observables. Here, the objective is to describe the evolution of beta purely in terms of what can be observed, which, as will be seen, already generates significant variations in beta over time. In the terminology of Forbes and Rigobon (2002), the paper's focus is to understand the sources of interdependence.

Estimation

Combining the return and beta equations, the parameters $\{\alpha_{0i}, \alpha_1, b_0, b_1, b_2\}$ can be estimated from the reduced-form panel specification

$$r_{it} = \alpha_{0i} + \alpha_1 r_{it-1} + b_0 r_t^{US} + b_1' X_{it} r_t^{US} + b_2' Y_t r_t^{US} + e_{it}$$

by regressing r_{it} on its own lag, the US equity return, and its interactions with observables X_{it} and Y_t. The estimate for financial beta is then simply obtained by

$$\hat{\beta}_{it} = \hat{b}_0 + \hat{b}_1{}' X_{it} + \hat{b}_2{}' Y_t$$

The model selection follows a simple general-to-specific strategy, a variant of which is also employed in Bekaert and others (2011).[4] The general unrestricted model with the full set of candidate factors X_{it} and Y_t is first estimated. Using 10 per cent confidence level as an acceptance threshold, the most insignificant variable is successively removed from the specification until a specification is obtained that features only significant variables. After the procedure settles on a specification, each previously rejected variable is retested for significance, to arrive at the final parsimonious specification. The selection procedure therefore lets the data both identify the determinants of financial beta and quantify their impacts.

Several restrictions on the role of expected risk premium can be considered. When both α_{0i} and α_1 are set to zero, the model is reduced to the standard "*Pure CAPM*" equation, with r_t^{US} representing the market portfolio return. Under this restriction, each market's excess return is only driven by the market (US equity) return. Alternatively, α_{0i} could be constrained to be constant across i, to be estimated along with α_1. The restriction allows for the expected risk premium to vary over time, but in a functionally-equivalent way across economies ("*Non-zero Expected Risk Premium*"). In both of these restrictions, the estimation is simply OLS on

[4] The general-to-specific methodology owes its development to David Hendry. For a recent survey, see Campos, Ericsson, and Hendry (2005).

stacked-up data. Finally, the unrestricted model allows for the expected risk premium to exist and vary across economies via constant α_{0i}, which can be estimated in fixed effect panel regression ("*Heterogeneous Expected Premium*").[5]

Data

To construct a good-sized panel, the data set is extended to include non-Asian economies from OECD (Germany, Great Britain, France, Austria, Belgium, Canada, Denmark, Finland, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland), and other emerging markets (Argentina, Brazil, Chile, Colombia, Mexico, Peru, South Africa, Turkey, Poland, Hungary, Czech Republic, and Russia). The monthly panel comprises 42 economies, with 13 from Asia, covering the period 1990–2011.

All excess returns are computed using the monthly returns of equity indices, less the return on the 3-month US treasury bills. Equity indices used to calculate returns are the same as explained in the previous section. Exchange rate movements are not taken into account, under the assumption that equity investors hedge away their FX risks.

The country-specific factors X_{it} include measures of economic 'linkages', through the channels of trade, banking, and FDI. The same variables used in the previous section, namely TRADE, BANK and FDI (describing the bilateral linkages between the US and country i) are adopted and supplemented by the ratio of seasonally-adjusted exports plus imports to GDP as an additional indicator of trade openness. X_{it} also includes POLICIES, namely fiscal balances, the exchange rate regime, capital account openness, and foreign reserves-to-GDP also described in the previous section. Vulnerability to capital outflows is also included, measured by the ratios of short-term external debt to GDP, and reserves to short-term external debt. Lastly, the cyclical component of real GDP (HP-filtered series) is added to X_{it} to capture the effect of the business cycle.

The common factor Y_t consists of two standard measures of global financial market conditions, VIX and the slope of the US treasury yield curve (10- minus 2-year yields). During financial stresses, VIX is expected to increase, while the treasury slope should flatten, indicating a flight to safety and higher chance of a US (and hence global) recession. A time trend is also included to pick up any longer-term structural changes in financial beta not captured by other included variables, but is found to be insignificant and is therefore dropped from all regressions.

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[5] A potential concern is the standard downward dependent variable bias associated with the estimation of dynamic fixed effects models (Nickel, 1981). However, the downward lagged dependent variable bias is known to fall as the time span of the sample increases. Furthermore, it is less of a concern when the time span is large and of the same order of magnitude of the number of countries, as is the case here (Judson and Owen, 1999).

III. Results

In this section, the results from the second panel regressions (Approach II) are first presented, which are used to derive the implied time series of financial beta in Asia. The fitted model is also exploited to explain the contributions to betas by the underlying determinations vary over the recent episodes of global financial turmoil. Then, the results from the first approach (Approach I) are discussed, emphasizing that sound macroeconomic policy frameworks can play an important role in explaining cross-country variations in financial beta.

Understanding How Betas Change Over Time

Table 1 through Table 3 show results using Approach II (panel regressions focusing on how betas vary over time). The most general specification is shown under the "General" column. After the general-to-specific selection procedure is applied (see Campos and others, 2005), the model is reduced down to the final specification as shown under the "GS search" column. The data availability for BANK and short-term external debt is however limited for a number of countries. To expand the number of observations and also as a robustness test, two restricted models are considered. The first drops BANK and external debt before the general-to-specific selection is applied. The number of observations roughly doubles, and the result of the procedure is shown in the "GS 2" column. In the second restricted model, only debt variables are dropped, with the result shown in the "GS 3" column. Table 1 through Table 3 show the results for pure CAPM ($\alpha_{0i} = \alpha_1 = 0$), risk premium (constant α_{0i}), and heterogeneous risk premium specifications, respectively.

The variable VIX is a significant determinant of betas across all specifications considered, suggesting that financial stresses are associated with an increase in financial betas.[6] The yield curve slope is found to be significant for half of the specifications, with negative sign as expected (that is, beta picks up as the yield curve flattens). The other cyclical factor, the deviation of output growth from trend, is found to be important with an expected negative sign under all "GS 3" models.

Trade openness (as measured by the sum of exports and imports relative to GDP) is significant for most specifications, with greater openness associated with a higher beta. Higher FDI, when significant, also tends to raise beta through greater financial exposure. Banking linkages, on the other hand, appear to exert negative influences on beta. While larger banking flows may be associated with a greater exposure to the banking channel of financial linkages, the results suggest that international bank financing may serve as a

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[6] Because an explicit asset-pricing factor model is used here, the linkage between volatility (VIX) and correlation (beta) is not subject to critiques of Forbes and Rigobon (2002). In other words, the result is not a statistical artifact of how correlation is calculated, but points towards a genuine link between financial stresses and financial "spillovers".

substitute for capital markets, thereby resulting in the negative sign. In other words, to the extent that banking inflows can help ease financing stresses, they should also help lower beta. Lower fiscal balances, when significant, tend to decrease beta, perhaps reflecting the benefits of counter-cyclical fiscal policy during severe economic slowdowns.

Higher levels of foreign exchange reserves, by providing more insurance against disruptions from sudden outflows, help lower financial beta as expected. While the magnitude of the coefficient, when significant, is almost identical across all specifications, there is also some evidence of nonlinearity, namely there are diminishing ‘insurance’ benefits from ever increasing reserves (see below). Short-term external debt raises financial beta as might be expected, whether measured relative to foreign reserves or GDP. Lastly, while the general specification controls for exchange rate regime and capital account openness, there is only scant evidence that either of these matters in a robust way.

A single model needs to be chosen to compute an estimate of a beta time series. The fitted model with fixed effects leaving out short-term debt variables is adopted for this purpose (Table 3, GS 3). This model nests the pure CAPM in Table 1 and the simple premium model in Table 2. Also, by leaving out short-term debt, more observations are available for the estimation, and a longer beta time series can be generated. Nonetheless, the fitted beta does not differ significantly across models in any case.

Table 3. Pure CAPM

Variables	General	GS search	GS 2	GS 3
r_t^{US}	0.758*** (0.000)	0.635*** (0.000)	0.544*** (0.000)	0.616*** (0.000)
Trade × r_t^{US}	0.001 (0.164)	0.001** (0.038)	0.002*** (0.000)	0.001*** (0.000)
Imports × r_t^{US}	-0.001 (0.824)			
Banking × r_t^{US}	-0.030*** (0.003)	-0.026*** (0.001)		-0.018*** (0.000)
FDI × r_t^{US}	0.031* (0.130)			0.021** (0.018)
Fiscal × r_t^{US}	0.014** (0.019)	0.014** (0.017)	0.006* (0.076)	
Reserves × r_t^{US}	0.001 (0.748)		-0.003*** (0.006)	
Capital Openness × r_t^{US}	0.000 (1.000)			
ER Regime × r_t^{US}	0.048 (0.160)	0.072** (0.035)		
Debt/GDP × r_t^{US}	0.001 (0.125)	0.002*** (0.000)		
Reserve/Debt × r_t^{US}	-0.000** (0.022)	-0.000** (0.025)		
GDP × r_t^{US}	-0.008 (0.275)			-0.013** (0.017)
VIX × r_t^{US}	0.006** (0.014)	0.007*** (0.002)	0.007*** (0.006)	0.006*** (0.000)
Yield Slope × r_t^{US}	-0.054 (0.101)	-0.057* (0.066)		
R^2	0.27	0.24	0.27	0.27
Observations	4573	4884	9713	8082

Source: Authors' calculations.
[1] Column "General" shows the most general specification; "GS search" shows results under the general-to-specific specification search algorithm; "GS 2" drops Banking, Debt/GDP and Reserve/Debt to increase observations before applying general-to-specific search; "GS 3" similarly drops Debt/GDP and Reserve/Debt.
[2] ***, ** and * denote significance at 1, 5, and 10 percent confidence levels respectively. P-values are shown in parentheses.

Table 4. Non-Zero Expected Risk Premium

Variables	General	GS search	GS 2	GS 3
Constant	0.417*** (0.000)	0.473*** (0.000)	0.178*** (0.007)	0.297*** (0.000)
r_{it-1}	0.045** (0.036)	0.052*** (0.010)	0.068*** (0.000)	0.051*** (0.001)
r_t^{US}	0.706*** (0.000)	0.590*** (0.000)	0.538*** (0.000)	0.564*** (0.000)
Trade $\times r_t^{US}$	0.001 (0.130)	0.001** (0.033)	0.002*** (0.000)	0.002*** (0.000)
Imports $\times r_t^{US}$	-0.001 (0.807)			
Banking $\times r_t^{US}$	-0.029*** (0.004)	-0.025*** (0.002)		-0.012*** (0.004)
FDI $\times r_t^{US}$	0.031 (0.133)			
Fiscal $\times r_t^{US}$	0.013** (0.034)	0.013** (0.027)	0.006* (0.070)	
Reserves $\times r_t^{US}$	0.0003 (0.836)		-0.003*** (0.005)	-0.003** (0.020)
Capital Openness $\times r_t^{US}$	0.001 (0.958)			
ER Regime $\times r_t^{US}$	0.049 (0.158)	0.069** (0.042)		
Debt/GDP $\times r_t^{US}$	0.001 (0.158)	0.002*** (0.001)		
Reserve/Debt $\times r_t^{US}$	-0.0002** (0.022)	-0.0002** (0.027)		
GDP $\times r_t^{US}$	-0.006 (0.423)			-0.010* (0.082)
VIX $\times r_t^{US}$	0.007*** (0.002)	0.009*** (0.000)	0.007*** (0.000)	0.007*** (0.000)
Yield Slope $\times r_t^{US}$	-0.068** (0.040)	-0.073** (0.020)		
R^2	0.27	0.25	0.28	0.27
Observations	4573	4879	9689	8075

Source: Authors' calculations.
[1] Column "General" shows the most general specification; "GS search" shows results under the general-to-specific specification search algorithm; "GS 2" drops Banking, Debt/GDP and Reserve/Debt to increase observations before applying general-to-specific search; "GS 3" similarly drops Debt/GDP and Reserve/Debt.
[2] ***, ** and * denote significance at 1, 5, and 10 percent confidence levels respectively. P-values are shown in parentheses.

Table 5. Heterogeneous Expected Premium (Fixed Effects)

Variables	General	GS search	GS 2	GS 3
Constant	0.418*** (0.000)	0.454*** (0.000)	0.273*** (0.000)	0.294*** (0.000)
r_{it-1}	0.041* (0.099)	0.051** (0.040)	0.074*** (0.000)	0.045** (0.028)
r_t^{US}	0.708*** (0.001)	0.671*** (0.000)	0.515*** (0.000)	0.577*** (0.000)
Trade $\times r_t^{US}$	0.001 (0.358)		0.002** (0.020)	0.001*** (0.004)
Imports $\times r_t^{US}$	-0.001 (0.866)			
Banking $\times r_t^{US}$	-0.028** (0.026)			-0.017** (0.017)
FDI $\times r_t^{US}$	0.028 (0.399)			0.020** (0.028)
Fiscal $\times r_t^{US}$	0.013** (0.036)	0.019*** (0.001)		
Reserves $\times r_t^{US}$	0.0003 (0.866)		-0.003* (0.076)	
Capital Openness $\times r_t^{US}$	0.0005 (0.990)			
ER Regime $\times r_t^{US}$	0.049 (0.313)			
Debt/GDP $\times r_t^{US}$	0.001 (0.367)	0.001*** (0.000)		
Reserve/Debt $\times r_t^{US}$	-0.0002* (0.059)			
GDP $\times r_t^{US}$	-0.005 (0.254)			-0.011* (0.064)
VIX $\times r_t^{US}$	0.007*** (0.003)	0.009*** (0.000)	0.008*** (0.000)	0.007*** (0.000)
Yield Slope $\times r_t^{US}$	-0.067* (0.065)	-0.068* (0.093)		
R^2	0.27	0.24	0.24	0.27
Observations	4573	4949	10538	8075

Source: Authors' calculations.
[1] Column "General" shows the most general specification; "GS search" shows results under the general-to-specific specification search algorithm; "GS 2" drops Banking, Debt/GDP and Reserve/Debt to increase observations before applying general-to-specific search; "GS 3" similarly drops Debt/GDP and Reserve/Debt.
[2] ***, ** and * denote significance at 1, 5, and 10 percent confidence levels respectively. P-values are shown in parentheses.