



IMF Working Paper

Capital Inflows, Financial Development,
and Domestic Investment:
Determinants and Inter-Relationships

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Research Department

**Capital Inflows, Financial Development, and Domestic Investment:
Determinants and Inter-Relationships**

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Abstract

We examine determinants of, and interactions between, capital inflows, financial development, and domestic investment in developing countries during 2001–07, a period of surging global liquidity and low interest rates. Reductions in the global price of risk and in domestic borrowing costs were the main contributors to the increase over time in net capital inflows and domestic credit. However, the large cross-country differences in domestic and international finance are best explained by fundamentals such as institutional quality, access to international export markets, and an appropriate macroeconomic policy. Both private capital inflows and domestic credit exert a positive effect on investment; they also mediate most of the investment impact of the global price of risk and domestic borrowing costs. Surprisingly, neither greater domestic credit nor greater institutional quality increase the extent to which capital inflows translate into domestic investment.

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CONTENTS	PAGE
Abstract	1
I. Introduction	3
II. Model specifications	4
A. Determinants of Capital Inflows and Domestic Credit	4
Cross-sectional analysis	4
Panel analysis	4
B. Determinants of Investment	5
Cross-sectional analysis	5
Panel analysis	5
III. Data Sources	6
IV. Empirical Results	8
A. Determinants of Capital Inflows and Domestic Credit	8
B. Determinants of Investment	9
V. Conclusions	9
VI. References	11
Tables	
Table 1. Private Finance: Cross-Country Regressions	13
Table 2. Private Finance: Panel Regressions	14
Table 3. Decomposition of Cross-Country Differences in Financial Variables	15
Table 4. Decomposition of Inter-Temporal Changes in Financial Variables	15
Table 5. Investment: Cross-Country Regressions	16
Table 6. Investment: Panel Regressions (Fixed Effects, Difference GMM, and System GMM)	17
Figures	
Figure 1. Covariates of Private Finance in Developing Countries	17
Appendix Tables	
Appendix Table 1. Country List	19
Appendix Table 2. Description of Variables and Data Sources	20
Appendix Table 3. Descriptive Statistics	21

I. INTRODUCTION

Between 2001 and the collapse of Lehman Brothers in the fall of 2008, international markets saw a global credit boom, characterized by an unprecedented loosening of global monetary conditions, a decline in global interest rates,² and a general reduction in the price of risk. As a result, throughout the developing world financial conditions relaxed, and interest rates and spreads declined. This decline in borrowing costs coincided with a rapid increase in financial inflows, domestic credit, and capital-market valuations in most developing regions.

Based on these observations, we address two key research questions. First, what factors explain whether, in response to the global loosening of monetary conditions, domestic and international finance in developing countries also expanded? Second, what factors explain whether the surge in global liquidity and in financial intermediation translated into productive investment in any given developing country? Our contribution is twofold. First, we focus on a very specific period, characterized by large, exogenous financial shocks, which suggests that it may be possible to estimate with some confidence any underlying causal relationships. Second, our analysis employs a new measure of the global price of risk.

This paper is related to three main strands of the literature. First, studies of determinants of capital inflows, which in particular distinguish between global (or “push”) factors and domestic (or “pull”) factors, often finding important roles for both.³ Second, analyses of the effect on growth and economic development of the surge in capital inflows to developing countries over the past decades.⁴ Third, the voluminous literature on the relationship between financial development and economic growth.⁵ Such studies typically find that capital inflows, financial development, and the size and efficiency of financial institutions are all positively correlated with productive efficiency and growth in the cross-sectional data. However, the literature is not unanimous in identifying a causal relationship, particularly between capital inflows and growth.

The rest of this paper is set out as follows. Section II discusses our empirical strategy. Section III describes the data. Section IV presents the findings. Section V concludes.

² Long-term real interest rates were about 1.5–2 percent during this period, compared with 3.5 percent during the U.S. expansion in the second half of the 1990s (World Bank, 2010).

³ For instance, Fratzscher (2011) finds that global factors were relatively more important as a driver of net capital flows during both 2005–07 and the 2007–08 financial crisis, but domestic factors have dominated in the recovery period since. Again, Bacchetta and van Wincoop (2012) and Gourio et al. (2010) find strong evidence that global shocks are transmitted to financial markets and capital flows.

⁴ See Dell’Ariccia et al. (2008), and Mody and Murshid (2005).

⁵ See Baltagi et al (2008), Shan (2005), Aghion et al. (2004), Nourzad (2002), Al-Yousif (2002), Al-Taimimi et al. (2001), Levine et al. (2000), Demetriades and Hussein (1999), Levine and Zervos (1998), Rousseau and Wachtel (1998), and Levine (1997).

II. MODEL SPECIFICATIONS

We address the above questions using both cross-sectional and panel estimation methods. The former allow us to analyze country-specific determinants of capital inflows, domestic credit, and investment. The latter also enable us to investigate the effects of country-invariant factors, such as changes in global risk conditions.

A. Determinants of Capital Inflows and Domestic Credit

Cross-sectional analysis

To estimate the effect of country-specific factors on domestic and external finance, we start with a pure cross-sectional setting, using a sample of 103 countries. The basic estimation equation is

$$Y_i = \alpha_0 + \alpha_1' X_i + \alpha_2' NR_i + \varepsilon_i, \quad (1)$$

where the subscript i denotes the country. Y_i represents, in turn, the ratio to GDP of: (1) international net capital inflows; and (2) domestic credit, defined as the total credit to the private sector. The vector X_i includes a range of variables drawn from the existing literature:

- The domestic cost of capital.
- Institutional quality.
- Exports of goods and non-factor services, as indicators of general economic openness.
- The government budget balance and CPI inflation, as indicator of the appropriateness of macroeconomic policy.
- Net capital inflows (in the equation for domestic credit). We allow capital inflows to affect domestic credit growth. In contrast, we assume that domestic credit does not directly affect capital inflows, although both may be affected by other variables.

We also control for the effect of natural-resource endowments by including indicators of natural resource intensity, NR_i . All dependent variables are constructed using average values during 2001–07. In the baseline specification, the independent variables are also constructed using average values over the same period. Alternative specifications aim to minimize endogeneity issues by employing either initial values, or lagged values (specifically, the average values during 1998–2000).

Panel analysis

Both as a robustness check, and to explore the role of the country-invariant global risk premium, a second set of estimations is run using panel regressions on annual data. The basic panel estimation equation is

$$Y_{it} = \mu_i + \beta_1 X_{it} + \beta_2 Z_t + \zeta_{it}, \quad (2)$$

where the subscripts i and t denote, respectively, the country and the year. As in the cross-sectional analysis, Y_{it} represents, in turn, the ratio to GDP of: (1) international net capital inflows (we consider separately total private flows, debt flows – aggregated and broken down by bond flows and bank loans, and equity flows); and (2) domestic credit. X_{it} is defined as in the cross-sectional analysis. Z_t is the country-invariant global risk premium. The country-specific fixed effects, μ_i , control for time-invariant factors that affect Y_{it} , such as country size. For the independent variables, one-year-lagged values are employed.

B. Determinants of Investment

Cross-sectional analysis

In order to examine the determinants of individual countries' macroeconomic performance, a modified form of equation (1) is estimated, with the ratio of investment to GDP as the dependent variable:

$$I_i = \alpha_0 + \alpha_1 XX_i + \alpha_2 NR_i + \varepsilon_i \quad (3)$$

The list of independent variables includes, as before, the cost of capital and indicators of natural resource intensity.⁶ In addition, the vector XX includes indicators of institutional quality, and measures of both capital inflows and domestic credit. Interactions between capital inflows and institutional quality, as well as between capital inflows and domestic credit, are added to capture the potential impact of domestic conditions on the efficiency with which capital inflows are invested. We also control for growth in the terms of trade (weighted by the trade ratio), and in export markets (weighted by the export ratio). Alternative specifications include lagged investment as an additional regressor, to better capture the dynamics.

Panel analysis

Again, both as a robustness check, and to explore the role of the country-invariant risk premium, a second set of investment estimations is run using panel regressions on annual data. The basic panel estimation equation is

$$I_{it} = \mu_i + \beta_1 XX_{it} + \beta_2 Z_t + \zeta_{it} \quad (4)$$

We also present alternative specifications which include lagged investment as a regressor. These equations are estimated using the Blundell and Bond (1998) GMM dynamic panel

⁶ Previous studies have found that natural resources play an important role in explaining long-run differences in private investment in developing countries (Bond and Malik, 2009).

estimator. The latter technique helps correct biases arising from endogeneity (the causality between investment and capital inflows or domestic credit can run in both directions) and from the use of the lagged dependent variable. The Arellano-Bond estimator is also appropriate because the panel dataset has a short time dimension ($T=7$) and a large country dimension ($N=110$).

III. DATA SOURCES

The global risk premium, or international price of risk, is proxied by the Kennedy and Palerm (2009) measure of the synthetic risk premium in high-income countries. This measure, which is relatively new to the literature, is based on factor analysis. Specifically, Kennedy and Palerm consider a sample of: (i) spreads on corporate bonds for the United States and the euro area; (ii) the implied risk premium on equities for each economy; and (iii) a representative global EMBI+ spread. The global risk premium is then calculated as the first principal component.

The cost of capital is measured as the sum of the required return on investment and an assumed rate of capital depreciation of 7 percent.⁷ The required return on investment is measured as the sum of the global risk-free rate (the U.S. T-bill rate), plus a country-specific credit spread. Credit spreads were measured using the market spread on the country's sovereign bonds (from the J.P. Morgan EMBI Global stripped spread) for those countries with data available; for the remaining countries, regional averages were used instead.

All the capital flow variables are constructed using data from the World Bank's *Global Development Finance* (GDF) database. This source provides a more comprehensive coverage of the different types of component sub-flows and has fewer gaps than comparable sources.⁸ Its main limitation is that it covers exclusively developing countries, and therefore does not allow for comparisons with advanced economies (that said, the determinants of capital flows to developed countries are likely to be very different). Private net capital flows consist of net equity inflows (FDI flows and portfolio equity) and net debt inflows (bond issuance, bank lending, short-term debt, and net lending from other private creditors). Together with net official inflows (public and publicly guaranteed debt from official creditors, plus IMF purchases minus IMF repurchases), they represent total capital inflows to the recipient country. The net debt flows (either net lending or net disbursements) are disbursements minus principal repayments.

The quality of the institutional environment is proxied by the average of the six governance indicators in the Kaufmann-Kraay-Mastruzzi (2009; henceforth KKM) database. The six

⁷ See World Bank (2010), ch. 2, p. 25, for a discussion of appropriate assumptions regarding depreciation rates.

⁸ For a comparison of the different data sources available for international capital flows, see Dorsey et al. (2008), discussion and Annex Table 1.

governance indicators are: voice and accountability; political stability and absence of violence/terrorism; government effectiveness; regulatory quality; rule of law; and control of corruption. On each governance indicator, countries are ranked on a scale from 1 to 100. Percentile rank indicates the percentage of countries worldwide that rate below the selected country, with higher values indicating better governance ratings. An alternative proxy for the institutional environment, the ICRG law and order ranking, was used to check robustness of the results.⁹

The terms-of-trade index, weighted by the trade ratio, captures the impact of a proportionate change in the terms of trade, given the economy's level of openness. We adopt two measures of real-side openness: (i) exports of goods and non-factor services as a share of GDP; and (ii) export market growth, calculated as the weighted growth rate of total imports in a country's trade partners, where the weights equal that trade partner's average share in the country's total exports over 2000–03. All these measures are derived from the IMF's *International Financial Statistics* (IFS) and *World Economic Outlook* databases, and the World Bank's *Global Economic Prospects* database.

The remaining data are derived from World Bank's *World Development Indicators* (WDI) and the IFS databases. The series include indicators of macroeconomic stability (the fiscal balance as a share of GDP, and the consumer price index) and domestic credit (domestic credit to the private sector as a share of GDP). Additional data on exports of fuel and metals were extracted from WDI to build indicators of natural-resource intensity: countries in the upper quartile of the (fuel exports / GDP) and/or the (metals exports / GDP) distribution are defined as resource-rich.

The sample contains 103 countries, listed in Appendix Table 1. Appendix Table 2 summarizes the data sources for the key variables, and Appendix Table 3 presents summary statistics for each variable. In addition, Figure 1 presents the simple bivariate correlations between, on the one hand, domestic credit and foreign private capital inflows, and on the other hand several potential determinants of private finance (including the cost of capital, institutional quality, and exports intensity). Private finance (represented by foreign capital inflows and domestic credit) is correlated negatively with borrowing costs, and positively with institutional quality and real-side openness. To draw robust policy conclusions, we next turn to multivariate analysis.

⁹ The KKM index is preferred because it has wider country coverage than the ICRG indicator.

IV. EMPIRICAL RESULTS

A. Determinants of Capital Inflows and Domestic Credit

We present the results using both net capital inflows and domestic credit as the dependent variables. For each of the two, we report results for different specifications with the explanatory variables calculated in turn as:

1. Contemporaneous values, in the form of averages over 2001–07;
2. Initial values, given by the first available year between 2001 and 2007; and
3. Lagged values, in the form of averages over 1998–2000.

As a variation on (3) above, we also use lagged values as instrumental variables. The cross-country regressions consistently suggest that capital inflows into the average developing country are significantly affected by institutional quality, the share of exports in GDP, and the average rate of export growth over the previous decade (Table 1, columns 1–4). A 10–percentage–point increase in exports / GDP leads on average to a 1.1 percentage point of GDP increase in net capital inflows. Controlling for the export share, countries with higher export growth rates between 1990 and 1997 attracted less capital inflows between 2001 and 2007.

The level of domestic credit is significantly affected by the cost of capital, institutional quality, and exports (Table 1, columns 5–8). Borrowing costs have a particularly large, negative effect on domestic credit. For the average developing country, a 100 basis point decline in borrowing costs (relative to the pre–2001 average) results in an increase in domestic credit of 0.8 percentage points of GDP (using the preferred specification in column 8). There is also some evidence that domestic credit is negatively affected by inflation, as well as by budget deficits (consistent with crowding out).

Panel regressions allow us to explore the role of the country-invariant global risk premium. The results confirm statistically significant associations between net capital inflows and the global price of risk (Table 2). There is also a significant association between domestic credit on the one hand, and net private capital inflows, the global price of risk, and institutional quality on the other.

Quantitatively, the panel estimates indicate that a 1 point decline in the measure of the global price of risk, equivalent to the decline observed between 2003 and 2007, results in a 1.8 percentage point of GDP increase in foreign capital inflows, and a 1.7 percentage point of GDP increase in domestic credit. Controlling for the global price of risk, the cost of capital does not have an independent influence on either capital inflows or domestic credit.

Disaggregating total capital inflows into their equity and debt components, and running separate panel regressions for each, suggests that equity flows are relatively more sensitive to

changes in the global price of risk than debt flows. Institutional quality also has a significant effect on equity inflows.

Overall, *cross-country differences* in the level of financial intermediation are very large and are best explained by fundamental factors such as the quality of institutions, access to international export markets, cost of capital, and inflation (Table 3). In contrast, lower global risk and the overall expansion of global liquidity are the biggest contributors to the *increase over time* in the extent of intermediation in developing countries (Table 4).

B. Determinants of Investment

In the second part of the analysis, we examine the effect that the liquidity boom had on developing-country investment during 2001–07. Cross-country regressions indicate a negative and significant impact of borrowing costs on investment (Table 5, specifications 1, 2, and 4). Likewise, private net capital inflows have a positive and significant impact on investment. Controlling for lagged investment, the results remain similar. The results also indicate strong persistence in investment. Neither institutional quality nor domestic credit affect the extent to which capital inflows translate into domestic investment in the preferred IV specification.

The panel fixed-effects regressions indicate that institutional quality, domestic credit, and export markets exert a positive effect on investment (Table 6, column 1). In addition, growth in the (trade-weighted) terms of trade is associated with higher investment. Again, neither institutional quality nor domestic credit affect the extent to which capital inflows translate into domestic investment. Dynamic panel specifications yield slightly different results (columns 2–5). In the first-difference GMM specification, domestic credit has a positive effect on investment. In the system GMM, it is instead net capital inflows that affect investment; the fiscal balance also exerts a statistically significant effect. After controlling for these variables, neither the global price of risk, nor domestic borrowing costs, exert any additional direct effect on investment. Put differently, and in light of the previous results, both the global price of risk and domestic borrowing costs affect investment mainly through their impact on net capital inflows and domestic credit.

V. CONCLUSIONS

This paper explores empirically some determinants of, and interactions between, capital inflows, domestic credit, and domestic investment in developing countries between 2001 and 2007. This period saw an unprecedented loosening of global monetary conditions, resulting in a rapid decline in interest rates and spreads in most developing regions. It also coincided with a rapid increase in financial inflows, domestic credit, and capital-market valuations throughout the developing world. The presence of large, exogenous financial shocks suggests that it may be possible to estimate with some confidence any underlying causal relationships.

Cross-sectional and panel techniques find that reductions in the global price of risk and in domestic borrowing costs were the main contributors to the increase over time in net capital inflows and domestic credit. That said, cross-country differences in international and domestic finance are very large, and are best explained by fundamental factors such as institutional quality, access to international export markets, and an appropriate macroeconomic policy.

Further, both net capital inflows and domestic credit exert a positive effect on investment. Any effect of the global price of risk and domestic borrowing costs arises mainly through their impact on net capital inflows and domestic credit. Surprisingly, neither greater institutional quality nor greater domestic credit increase the extent to which capital inflows translate into domestic investment. Future research should investigate further the relationship between surges in global liquidity and productive investment in developing countries.

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Table 1. Private Finance: Cross-Country Regressions

	Net Private Capital Inflows (percent of GDP, average 2001–07)				Domestic Credit (Private sector credit / GDP, average 2001–07)			
	(1) OLS Indep. Vars: average 2001–07	(2) OLS Indep. Vars: first available year, 2001–07	(3) OLS Indep. Vars: average 1998– 2000	(4) IV Instruments: average 1998– 2000	(5) OLS Indep. Vars: average 2001–07	(6) OLS Indep. Vars: first available year, 2001–07	(7) OLS Indep. Vars: average 1998–2000	(8) IV Instruments: average 1998– 2000
Net Private Capital Inflows (percent of GDP)					-0.46 (0.44)	0.41 (0.32)	0.11 (0.35)	-0.56 (0.45)
Cost of Capital (percent)	-0.10 (0.07)	0.16 (0.18)	0.18 (0.12)	-0.11 (0.08)	-0.94** (0.45)	-1.72** (0.81)	-1.88** (0.82)	-0.83** (0.35)
Institutional quality: KKM index	0.10** (0.04)	0.09** (0.04)	0.10** (0.04)	0.11*** (0.04)	0.75*** (0.17)	0.57*** (0.16)	0.55*** (0.14)	0.74*** (0.19)
Exports of goods and services (percent of GDP)	0.10*** (0.04)	0.10*** (0.04)	0.09*** (0.03)	0.11*** (0.04)	0.36** (0.15)	0.25 (0.15)	0.32** (0.14)	0.35** (0.15)
General government budget balance (percent of GDP)	0.12 (0.12)	0.02 (0.07)	-0.12 (0.10)	-0.31 (0.22)	0.64 (0.58)	0.92*** (0.26)	0.73** (0.30)	0.59 (0.58)
CPI Inflation (log)	0.01 (0.54)	-0.42 (0.45)	-0.33 (0.38)	-0.03 (0.64)	-2.98 (2.75)	-4.22* (2.35)	-3.70* (1.92)	-8.93** (4.43)
Indicator: Large exporter of fuel	-1.42 (2.07)	-1.86 (1.64)	-1.66 (2.05)	0.47 (2.31)	2.28 (6.73)	-0.46 (5.08)	5.56 (5.06)	3.52 (7.02)
Indicator: Large exporter of metals	1.11 (1.62)	0.98 (1.44)	0.66 (1.65)	1.15 (1.60)	1.39 (7.15)	1.89 (5.57)	5.98 (6.24)	1.33 (6.96)
Constant	1.57 (2.54)	-1.60 (4.27)	-2.53 (3.19)	0.06 (2.54)	11.33 (13.01)	41.43** (18.75)	44.55** (20.65)	20.24 (15.16)
Observations	103	103	102	103	103	103	102	102
R ²	0.371	0.352	0.311	0.306	0.448	0.502	0.538	0.410

Notes: ***, **, and * denote significance at the, respectively, 10 percent, 5 percent, and 1 percent level. Significance is evaluated using robust standard errors (in parentheses). Endogenous regressors are identified using the Durbin-Wu-Hausman test.

Table 2. Private Finance: Panel Regressions

Dependent Variable:	Net Private Capital Inflows (pct. of GDP)	Net Equity Inflows (pct. of GDP)	Net Debt Inflows (pct. of GDP)	Net Bank Inflows (pct. of GDP)	Net Bond Inflows (pct. of GDP)	Domestic Credit (private sector credit, pct. of GDP)				
Explanatory variables:										
Net Private Capital Inflows (percent of GDP)						0.26**				
						(0.11)				
Net Equity Inflows (percent of GDP)							0.22*			
							(0.13)			
Net Debt Inflows (percent of GDP)								0.32**		
								(0.15)		
Net Bank Inflows (percent of GDP)									1.00**	
									(0.43)	
Net Bond Inflows (percent of GDP)										0.21
										(0.34)
Global price of risk	-1.79***	-1.08***	-0.72**	-0.25	-0.16	-1.73*	-1.91**	-1.85**	-1.60*	-2.03**
	(0.44)	(0.29)	(0.33)	(0.22)	(0.12)	(0.89)	(0.90)	(0.92)	(0.91)	(0.93)
Cost of capital (percent)	-0.06	-0.00	-0.06	-0.06	-0.01	-0.27	-0.28	-0.27	-0.30	-0.28
	(0.09)	(0.04)	(0.07)	(0.06)	(0.05)	(0.23)	(0.22)	(0.24)	(0.23)	(0.23)
Institutional quality: KKM index	0.08	0.13*	-0.05	-0.05	0.05	0.23**	0.25**	0.25**	0.24**	0.27**
	(0.09)	(0.07)	(0.04)	(0.05)	(0.04)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Exports of goods and services (percent of GDP)	0.02	-0.04	0.06	0.01	-0.00	-0.06	-0.05	-0.07	-0.06	-0.06
	(0.07)	(0.06)	(0.04)	(0.02)	(0.02)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
General government budget balance (percent of GDP)	-0.06	-0.03	-0.04	0.04	-0.04	0.07	0.06	0.07	0.06	0.06
	(0.19)	(0.18)	(0.04)	(0.04)	(0.04)	(0.10)	(0.09)	(0.08)	(0.08)	(0.08)
CPI Inflation (log)	0.38	0.62	-0.23	0.22	-0.22	-0.46	-0.45	-0.21	-0.33	-0.24
	(0.53)	(0.48)	(0.30)	(0.15)	(0.15)	(0.43)	(0.43)	(0.43)	(0.39)	(0.43)
Indicator: Large exporter of fuel	-0.23	0.38	-0.62	-0.14	0.03	-0.69	-1.22	-0.52	-0.66	-1.18
	(1.40)	(1.22)	(0.75)	(0.51)	(0.23)	(1.88)	(1.86)	(1.89)	(2.02)	(1.89)
Indicator: Large exporter of metals	-0.16	0.53	-0.69	0.20	-0.16	-1.89	-1.67	-1.76	-1.46	-1.54
	(1.15)	(0.86)	(0.77)	(0.40)	(0.21)	(1.65)	(1.69)	(1.60)	(1.78)	(1.65)
Constant	2.92	-0.10	3.03	3.06	-0.83	29.10***	28.90***	29.39***	29.82***	29.08***
	(5.21)	(4.50)	(2.50)	(1.97)	(1.53)	(6.13)	(6.20)	(6.16)	(6.23)	(6.19)
Observations	602	602	598	598	598	592	592	587	587	587
R ²	0.057	0.047	0.044	0.039	0.014	0.174	0.148	0.161	0.200	0.135

Notes: All regressions are estimated using annual data over 2001–07, with all independent variables lagged once and controlling for country-specific fixed effects. ***, **, and * denote significance at the, respectively, 10 percent, 5 percent, and 1 percent level. Significance is evaluated using robust standard errors (in parentheses).

Table 3. Decomposition of Cross-Country Differences in Financial Variables

Financial Variables	Net Private Capital Inflows	Domestic Credit
	(percent of GDP)	
<i>Difference Between Top and Bottom Quartile of Dependent Variable (time average)</i>	7.4	27.8
Contribution of differences in (time average of): ¹⁰		
Cost of capital	...	-1.4
Institutional quality	3.0	20.0
Exports of goods and services	2.9	9.3
Export market growth, 1990–97	-3.0
Inflation	-10.7

Table 4. Decomposition of Inter-Temporal Changes in Financial Variables

Financial Variables	Net Private Capital Inflows	Domestic Credit
	(percent of GDP)	
<i>Change Over 2001–07 in Dependent Variable (country average)</i>	5.6	8.07
Contribution of changes in (country average of): ¹¹		
Global price of risk	2.6	2.5
Institutional quality	-0.10
Net private capital inflows	1.5

¹⁰ Calculated as the product of the cross-sectional regression coefficients (Table 1, preferred specifications in columns 4 and 8) and the time-averaged difference between the top and bottom quartile of the relevant variable. Values shown only where the coefficients are statistically significant.

¹¹ Calculated as the product of the panel regression coefficients (Table 2) and the country-averaged change over 2001–07 in the relevant variable (for the KKM index, the change is calculated over 2002–07, since values for 2001 are not available). Values shown only where the coefficients are statistically significant.

Table 5. Investment: Cross-Country Regressions

	Investment (percent of GDP, average 2001–07)							
	(1) OLS Indep. Vars: average 2001–07		(2) OLS Indep. Vars: first available year, 2001–07		(3) OLS Indep. Vars: average 1998–2000		(4) IV Instrument: private sector credit 1998–2000	
Investment (pre-period average 1998–2000, percent of GDP)	0.68*** (0.13)		0.62*** (0.14)		0.65*** (0.14)		0.69*** (0.13)	
Cost of capital (percent)	-0.40*** (0.15)	-0.30** (0.12)	-0.66*** (0.20)	-0.51*** (0.19)	-0.02 (0.21)	0.02 (0.17)	-0.43*** (0.14)	-0.34*** (0.11)
Institutional quality: KKM index	-0.09 (0.08)	-0.09 (0.06)	-0.12** (0.06)	-0.12** (0.05)	-0.03 (0.06)	-0.05 (0.05)	-0.06 (0.07)	-0.05 (0.06)
Domestic credit (private sector credit / GDP)	0.10** (0.04)	0.08*** (0.03)	0.02 (0.03)	0.01 (0.03)	0.00 (0.05)	0.02 (0.05)	0.06 (0.04)	0.03 (0.03)
Net private capital inflows (percent of GDP)	0.76*** (0.25)	0.88*** (0.22)	0.34* (0.20)	0.41** (0.21)	1.11*** (0.25)	1.12*** (0.27)	0.72*** (0.24)	0.85*** (0.21)
Terms of trade growth (* trade ratio)	-0.02 (0.09)	-0.00 (0.08)	-0.30 (0.27)	-0.36 (0.26)	0.18 (0.25)	0.03 (0.22)	-0.01 (0.09)	0.01 (0.07)
Export market growth (* export ratio)	0.19 (0.23)	0.26 (0.21)	0.03 (0.05)	0.02 (0.05)	0.02*** (0.01)	0.02*** (0.01)	0.17 (0.22)	0.24 (0.19)
Capital inflows * institutional quality	0.01* (0.01)	0.01 (0.00)	0.01*** (0.00)	0.01*** (0.00)	-0.00 (0.01)	-0.00 (0.01)	0.01 (0.00)	0.00 (0.00)
Capital inflows * domestic credit	-0.02*** (0.00)	-0.02*** (0.00)	-0.01** (0.00)	-0.01** (0.00)	-0.01* (0.01)	-0.02*** (0.01)	-0.01*** (0.00)	-0.01*** (0.00)
Indicator: Large exporter of fuel	1.50 (2.07)	1.52 (1.64)	1.70 (1.84)	1.94 (1.58)	1.40 (2.37)	1.09 (1.79)	1.60 (1.96)	1.62 (1.55)
Indicator: Large exporter of metals	-3.82** (1.66)	-3.53*** (1.32)	-1.53 (1.81)	-1.32 (1.48)	-0.50 (1.73)	-0.14 (1.52)	-3.71** (1.55)	-3.40*** (1.27)
Constant	25.85*** (4.41)	9.97** (4.56)	38.34*** (5.46)	22.86*** (6.51)	20.02*** (6.27)	7.88 (5.57)	26.75*** (4.21)	10.55** (4.25)
Observations	87	87	84	84	76	76	87	87
R ²	0.329	0.513	0.348	0.497	0.372	0.534	0.320	0.503

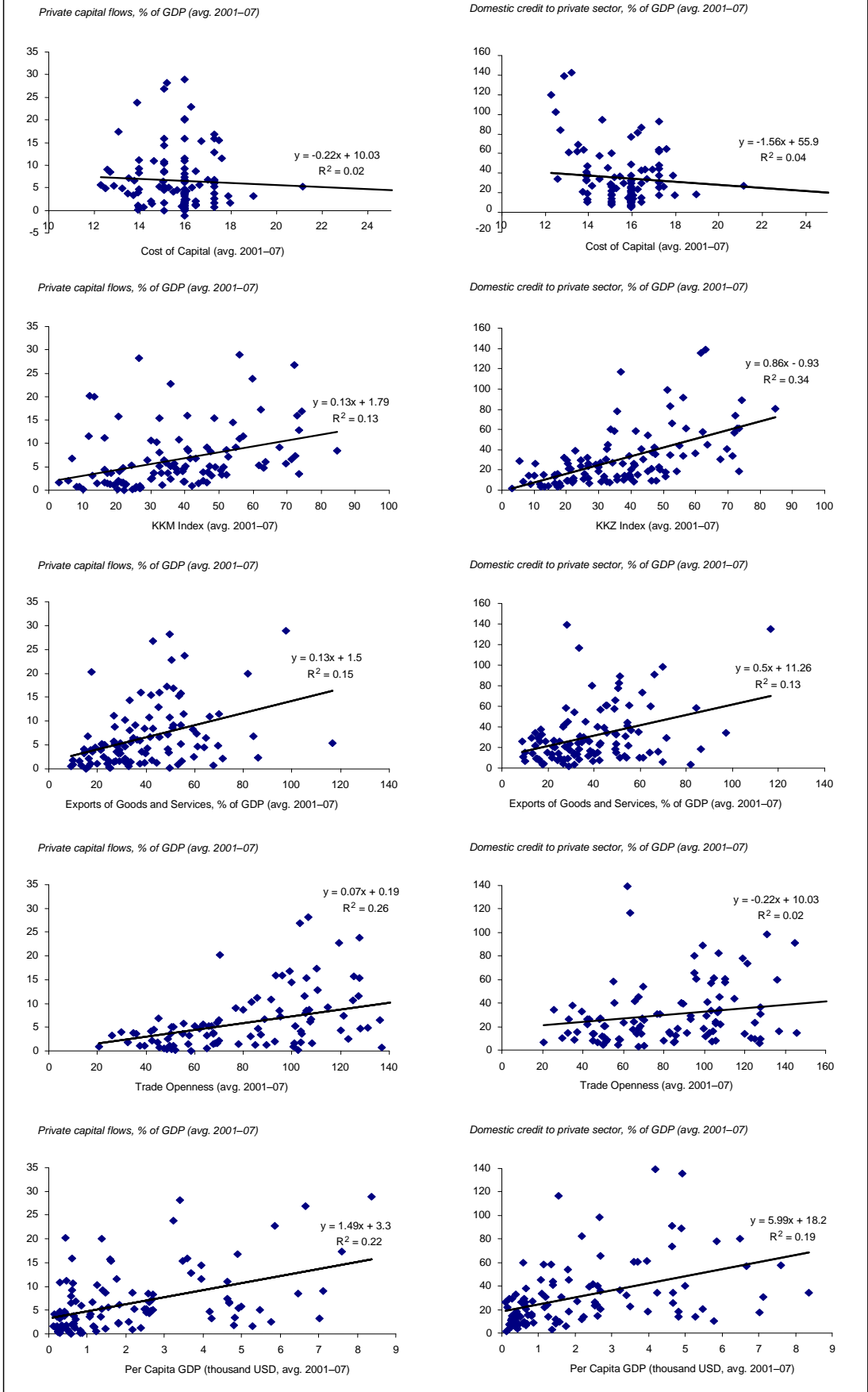
Notes: ***, **, and * denote significance at the, respectively, 10 percent, 5 percent, and 1 percent level. Significance is evaluated using robust standard errors (in parentheses).

Table 6. Investment: Panel Regressions (Fixed Effects, Difference GMM, and System GMM)

	Fixed Effects	Difference GMM		System GMM	
	Explanatory variables: 1 st lag (excl. resource indicators)	1 lag	2 lags	1 lag	2 lags
	(1)	(2)	(3)	(4)	(5)
Lagged investment (percent of GDP)		0.10 (0.18)	0.19*** (0.06)	0.88*** (0.22)	0.81*** (0.15)
Global price of risk	-0.57 (0.68)	0.36 (0.61)	0.06 (0.45)	0.71 (0.75)	0.89 (0.77)
Cost of capital	-0.05 (0.07)	-0.04 (0.06)	-0.11 (0.08)	0.03 (0.08)	-0.03 (0.06)
Institutional quality: KKM index	0.20** (0.09)	0.14 (0.11)	0.15 (0.11)	0.11* (0.06)	0.05 (0.06)
Domestic credit (private sector credit / GDP)	0.09** (0.04)	0.15** (0.06)	0.13*** (0.05)	-0.02 (0.03)	-0.02 (0.03)
Net private capital inflows (percent of GDP)	0.31 (0.27)	0.61 (0.38)	0.46 (0.33)	0.98*** (0.32)	0.65** (0.26)
Terms of trade growth (* trade ratio)	0.04* (0.02)	-0.03* (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Export market growth (* export ratio)	0.13* (0.07)	0.02 (0.08)	0.02 (0.06)	0.06 (0.12)	0.04 (0.11)
Government budget surplus (percent of GDP)	0.12 (0.15)	0.96 (0.61)	0.43 (0.53)	1.01** (0.45)	1.08*** (0.32)
Capital inflows * institutional quality	-0.00 (0.00)	-0.01 (0.01)	-0.01 (0.01)	-0.02*** (0.01)	-0.01** (0.01)
Capital inflows * domestic credit	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Indicator: Large exporter of fuel	-1.14 (1.17)	0.09 (0.75)	-0.13 (0.65)	-1.75 (1.85)	-2.13 (1.48)
Indicator: Large exporter of metals	0.38 (2.17)	3.71 (2.49)	3.20 (2.15)	-1.12 (1.42)	-0.90 (1.36)
Constant	11.41** (4.44)			0.65 (7.61)	6.08 (5.27)
Observations	495	412	412	499	499
R ²	0.22				
Hansen p-value		0.23	0.28	0.27	0.32
AR(1) p-value		0.97	0.83	0.06	0.04
AR(2) p-value		0.33	0.47	0.14	0.13

Notes: ***, **, and * denote significance at the, respectively, 10 percent, 5 percent, and 1 percent level. Significance is evaluated using robust standard errors (in parentheses). Specification (1) is estimated using annual data over 2001–07, with all independent variables lagged once, and controlling for country-specific fixed effects. Specifications (2)–(5) are estimated with Investment and Net Capital Inflows as endogenous variables. The GMM-style instruments are the first, or the first and second lags, of the endogenous variables.

Figure 1. Covariates of Private Finance in Developing Countries.



Appendix Table 1. Country List

<i>East Asia and Pacific</i>
China, Fiji, Indonesia, Cambodia, Lao PDR, Malaysia, Philippines, Papua New Guinea, Thailand, Vietnam, Vanuatu
<i>Europe and Central Asia</i>
Albania, Armenia, Azerbaijan, Bulgaria, Belarus, Georgia, Croatia, Kazakhstan, Kyrgyz Republic, Latvia, Moldova, Macedonia, Poland, Romania, Russian Federation, Turkey, Ukraine, Uzbekistan
<i>Latin America and the Caribbean</i>
Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Haiti, Jamaica, St. Lucia, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Uruguay, St. Vincent and the Grenadines, Venezuela
<i>Middle East and North Africa</i>
Algeria, Egypt, Iran, Jordan, Lebanon, Morocco, Syrian Arab Republic, Tunisia, Yemen
<i>South Asia</i>
Bangladesh, India, Sri Lanka, Nepal, Pakistan
<i>Sub-Saharan Africa</i>
Angola, Burundi, Benin, Burkina Faso, Botswana, Central African Republic, Côte d'Ivoire, Cameroon, Congo Rep., Comoros, Cape Verde, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Gambia, Guinea-Bissau, Kenya, Lesotho, Madagascar, Mali, Mozambique, Mauritania, Mauritius, Malawi, Niger, Nigeria, Rwanda, Sudan, Senegal, Sierra Leone, Swaziland, Seychelles, Chad, Togo, Tanzania, Uganda, South Africa, Congo Dem. Rep., Zambia, Zimbabwe

Appendix Table 2. Description of Variables and Data Sources

Variable	Description
<i>Private Capital Inflows</i>	Private net capital inflows (consisting of debt and equity flows) as a share of nominal GDP. Source: <i>Global Development Finance</i> , World Bank (2011).
<i>Investment</i>	Gross domestic fixed capital as a share of nominal GDP. Source: <i>World Development Indicators</i> , World Bank (2011).
<i>Domestic Credit</i>	Domestic credit to the private sector as a share of GDP. Source: <i>World Development Indicators</i> , World Bank (2011).
<i>Institutional Quality: KKM index</i>	Average across the six governance criteria in the KKM indicators. Source: <i>Governance Matters</i> , World Bank (2009).
<i>Cost of Capital</i>	Calculated as the U.S. T-Bill rate, plus the country-specific spread, plus depreciation. Source: Datastream and <i>Global Economic Prospects</i> , World Bank (2010).
<i>Global Price of Risk</i>	Synthetic risk premium in high-income countries calculated in Kennedy and Palerm (2009).
<i>Export Market Growth</i>	Export market growth, weighted by the trade partner's average share in the country's total exports (percent). Source: <i>Global Economic Prospects</i> , World Bank (2010).

Appendix Table 3. Descriptive Statistics.

	Period Averages, 2001–07				
	Obs.	Mean	Std Dev	Min	Max
Net private capital inflows (percent of GDP)	110	6.4	6.4	-1.1	28.9
Domestic credit (private sector credit, percent of GDP)	109	30.8	27.4	1.8	139.1
Investment (percent of GDP)	110	22.4	7.5	6.4	44.8
Cost of capital (percent)	110	16.1	3.6	12.3	41.7
Institutional quality: KKM index	110	36.7	18.6	3.0	84.6
Exports of goods and services (percent of GDP)	110	38.9	19.8	9.0	116.7
Government budget surplus (percent of GDP)	110	-3.1	4.8	-25.7	16.3
CPI Inflation (log)	105	1.6	0.9	-0.5	6.3
Terms of trade growth (* trade ratio, percent)	107	5.1	7.2	-9.7	32.9
Export market growth (* export ratio, percent)	91	7.1	2.8	0.0	16.5
Indicator: Resource intensity: mining	110	0.3	0.4	0.0	1.0
Indicator: Resource intensity: petroleum	110	0.2	0.4	0.0	1.0
Interaction: Private capital inflows * institutional quality	110	280	353	-12	1,933
Interaction: Private capital inflows * domestic credit	109	240.6	349.2	-29.3	1,773

	Annual Observations, All Years				
	Obs.	Mean	Std Dev	Min	Max
Net private capital inflows (percent of GDP)	769	6.4	8.9	-12.7	77.1
Domestic credit (private sector credit, percent of GDP)	750	30.8	28.3	0.7	167.3
Investment (percent of GDP)	770	22.4	9.0	5.3	71.0
Cost of capital (percent)	770	16.1	4.7	11.6	69.4
Institutional quality: KKM index	660	36.7	18.8	2.0	86.7
Exports of goods and services (percent of GDP)	770	38.9	21.0	6.1	135.1
Government budget surplus (percent of GDP)	770	-3.1	6.0	-36.3	28.5
CPI Inflation (log)	706	1.7	1.1	-4.0	10.1
Terms of trade growth (* trade ratio, percent)	721	5.1	20.3	-55.7	238.6
Export market growth (* export ratio, percent)	637	7.1	4.9	-14.1	26.8
Indicator: Resource intensity: mining	671	0.5	0.5	0.0	1.0
Indicator: Resource intensity: petroleum	671	0.3	0.5	0.0	1.0
Interaction: Private capital inflows * institutional quality	659	297	481	-686	4,304
Interaction: Private capital inflows * domestic credit	749	252	496	-752	4,725