BANK FOR INTERNATIONAL SETTLEMENTS

BIS Working Papers
No 994

Capital flows and institutions

by Deniz Igan, Alexandre R Lauwers and Damien Puy

Monetary and Economic Department

January 2022

JEL classification: F33, F60, G15, E02, O43.

Keywords: capital flows, institutions, manufacturing, institutional dependence.

This publication is available on the BIS website (www.bis.org).

ISSN 1020-0959 (print)
ISSN 1682-7678 (online)

Capital Flows and Institutions

Deniz Igan * Alexandre R. Lauwers§ Damien Puy‖

Abstract

Does foreign capital improve the quality of domestic institutions? Consistent with an institutional quality channel of capital flows, we show that industries that are more dependent on "good" institutions to operate grow more than others after foreign capital flows into the private sector. The effects are stronger in countries that are further away from the institutional frontier (e.g., emerging markets), but they disappear and even turn negative in countries with very low initial institutional quality, suggesting that foreign capital inflows can exacerbate the *ex-ante* institutional deficit. We also find that institution-dependent industries grow less when capital flows to the official sector. Our findings support the view that foreign investors can be, under certain conditions, a catalyst for institutional reform and that the relaxation of government budget constraints generally weakens structural reform incentives.

JEL codes: F33, F60, G15, E02, O43

Keywords: Capital Flows, Institutions, Manufacturing, Institutional Dependence

‡We are grateful to the participants at the IMF Macro-Financial seminar for helpful inputs. We thank Cédric Tille, Rahul Mukherjee, Paolo Mauro, for comments and suggestions. A substantial part of this work was completed when Alexandre Lauwers was an intern in the IMF Research Department. The views expressed here are those of the authors and do not reflect those of the BIS, IMF, or OECD. All errors are our own.

*Bank for International Settlements, and CEPR, email: deniz.igan@bis.org

§PhD Student, The Graduate Institute, Geneva, Case postale 1672, 1211 Genève 1, Switzerland, email: alexandre.lauwers@graduateinstitute.ch

‖Research Department, International Monetary Fund, email: DPuy@imf.org

1. Introduction

The conventional wisdom is that capital flows enhance growth in the recipient country by relaxing financing constraints and enabling technology transfer. Going beyond these traditional channels, some have argued that account liberalization and financial globalization can also be a catalyst for certain collateral benefits, such as financial market development, institutional improvements and better private and public governance, all of which may ultimately be more important in increasing GDP/TFP growth and reducing consumption volatility (Kose et al., 2009; Kose, Prasad and Taylor, 2011; Mishkin, 2007). This paper investigates specifically the link between the flow of foreign capital into a country and the quality of local institutions.

How can capital inflows improve local institutions? Theory has suggested several plausible mechanisms. Among those, the political economy channel has retained particular attention. Specifically, financial inflows could strengthen the position of ‘‘pro-reform’’ groups within a country, leading to a general improvement in the quality of institutions.[1] Rajan and Zingales (2003) propose an interest group theory where the arrival of foreign capital—through capital account opening—weakens incumbents' opposition to reforms and facilitates financial sector development, and supported their finding with both cross-sectional and time-series evidence.[2] Alternatively, the arrival of foreign capital could impose more economic discipline (Bekaert, Harvey and Lundblad, 2011). Foreign investors, for instance, might directly demand better governance practices at the country level, or exert greater monitoring pressure on the private sector (firms and financial intermediaries) to overcome information frictions, leading ultimately to an improvement of institutions at the country level. Finally, by expanding financial opportunities and reducing the cost of capital, the realized benefits (and prospect of more) capital inflows could create a shift of policy towards foreign investors' demands for better governance. This ‘‘golden straitjacket’’ theory has been shown to be particularly relevant for governments, which are prevented from engaging in predatory behaviour to avoid the risk of driving foreign investors away (Stulz, 2005; Blouin, Ghosal and Mukand, 2017).[3]

[1] Gains in institutional quality include, e.g., strengthening the rule of law, ensuring a predictable judiciary environment, raising government effectiveness, enforcing contracts and limiting corruption.

[2] Braun and Raddatz (2008) test a similar hypothesis in the context of trade liberalization episodes. They find that by reducing the relative power of groups most interested in blocking financial development, trade openness can have a significant impact on financial development.

[3] Qian and Roland (1998) and Obstfeld (1998) also argue that capital account liberalisation

Unfortunately, clean evidence of capital flows induced institutional changes is still missing. Two challenges complicate the identification of a (causal) link between capital flows and institutions in the data. The first is granularity. Since testing directly for this channel using standard macroeconomic and institutional quality data is hard, the empirical support is generally reduced to simple correlation analysis at the aggregate level, rather than proper causal evidence. For instance, Kose et al. (2009) find a strong positive correlation between financial openness and measures of institutional quality during the recent period of financial globalization (1985–2004), only "suggesting" that the institutional quality channel of capital flows might be at play. While good arguments exist for a positive impact of capital flows on institutions, one can imagine circumstances where the opposite happens. Foreign capital, especially when it flows to (inefficient) governments, might actually cause a delay in reforms and even harm domestic institutions (e.g., Alesina and Drazen, 1991; Fernández-Villaverde, Garicano and Santos, 2013; Santos, 2015). Assuming episodes of financial liberalization relax the budget of all agents in a country at the same time (both private and public), the effects could cancel each other out and make it hard to identify any effect at the country level, where most of the data is gathered.

The second is non-linearity. While the institutional gains induced by an additional unit of foreign capital might be small in countries that are already close to the institutional frontier, they might not even materialize in countries that are too far away from it. The latter would be in line with the large literature showing that the various benefits of financial integration take shape only when some pre-conditions, or thresholds, are met (Kose et al., 2009; Mishkin, 2007). Visual inspection of the data suggests that this might indeed be the case. Figure 1 plots the change in institutional quality in a large sample of countries—measured by a composite Institutional Quality Index[4]—against the quantity of foreign investments received (over a 3-year horizon). Although we find a mildly positive slope when looking at all countries, the size and strength of the relationship varies considerably across income groups, with the relationship being four to five times stronger in emerging markets than in advanced countries and even negative—but insignificant—in the least developed countries. Assuming that a causal link exists, Figure 1 therefore suggests that the collateral benefits of capital inflows

punishes wasteful or corrupt governments with capital flight.

[4]This composite measure of institutional quality equally weights four components of the political risk index in the ICRG database, namely: investment profile, law and order, corruption, and bureaucratic quality. Section 2.2.2 provides further details on its construction.

can vary considerably with the sample one looks at.

We circumvent those challenges in two steps. We first build on Rajan and Zingales (1998) and Rajan and Subramanian (2007), and estimate the impact of capital inflows on institutional quality indirectly through a difference-in-difference approach, exploiting the (within-country) performance of sectors that are structurally more reliant on ‘‘good’’ domestic institutions. More precisely, we conjecture that if foreign capital improves the quality of local institutions on its way into the country, industries that are more complex or for which relation-specific investments are more important—and therefore that rely heavily on the rule of law, contract enforcement, and low corruption to operate—should perform better than others, all else equal. Moreover, we posit that this association should also be stronger (i) in countries that are further away from the governance frontier, (ii) for the kind of foreign capital that imposes more discipline and strengthens incentives to improve local institutions and (iii) when capital flows to a sector that is more likely to push for reforms (i.e., the private sector). For instance, one would expect portfolio flows to the private sector intermediated by financial markets to have a bigger impact than concessional loans flowing to the government. After carefully establishing the impact of capital inflows on institutions in this framework, we then use it to investigate formally the existence of ‘‘institutional thresholds’’ over (or below) which gains vanish. To do so, we follow Kose, Prasad and Taylor (2011) and Klein (2005) and explore several interaction functions between our variable of interest and various proxies of institutional quality at the country level (such as investor protection, law and order, corruption, and quality of the bureaucracy). This allows us to identify if a threshold exists empirically and, if so, what dimension of institutions matters most.

We use a comprehensive industry-level dataset covering 22 manufacturing industries for a large sample of 89 advanced, emerging, and low-income countries between 1985 and 2014. We combine this industry data with an annual dataset of capital flows at an annual frequency based on IMF Balance of Payments (BOP) statistics, breaking down flows by (i) type (debt or equity) and (ii) borrowing sector (private or public). Building on the empirical trade literature, we rely on two different measures of ‘‘institutional dependence’’ at the industry level. The first, based on Levchenko (2007), uses the variety in a manufacturing industry’s intermediate inputs structure to proxy for the complexity of its production process and assess its dependence on the legal system to enforce contracts. The second, based on Nunn (2007), measures the importance of relationship-specific intermediate inputs in the production process to proxy for the contractual vulnerability of each industry to hold-up problems from its suppliers.

Consistent with an institutional quality channel of capital flows, we find that manufacturing industries that are more dependent on efficient contract enforcement and good governance grow more than others when foreign capital flows into the private sector of the recipient country. The effect is quantitatively and statistically strong and disappears when saturating the specification with an interaction between a country's institutional quality and the institutional dependence intensity, suggesting that financial flows "work" by relaxing the institutional constraint in recipient countries. We also find that results are driven by private debt inflows rather than by equity flows, and in particular foreign direct investment (FDI). To the extent that equity investment are much less reliant on intermediaries and/or on the recipient country institutional environment, we interpret this finding as supporting the institutional quality channel of capital flows.[5]

Two additional results support this interpretation. First, the results are specific to financing coming from abroad. Although institution-dependent industries grow disproportionately faster in countries receiving more (non-resident) debt flows, they do not when credit by residents grows; a finding consistent with the idea that monitoring is stronger when foreign investors are involved. Second, the effect is reversed when foreign capital flows to the public sector, with industries more dependent on good institutions growing on average *less* than others in countries receiving more flows to the official sector. This result, in turn, suggests that an increase in foreign financing might actually relax the budget constraint of incumbents and weaken the incentives to push for institutional change; a finding in line with the large literature on the political economy of reforms.[6]

We also provide supportive evidence on the existence of "thresholds" in the way capital flows affect the level of institutions. Consistent with the institutional channel we investigate, we find that the size and significance of the effect increases with the distance to the institutional frontier. Gains, in particular, are strong in emerging markets. Quantitatively, we estimate that the annual growth rate of the most institutionally intensive industries in an emerging

[5]Acquiring a controlling interest in a firm reduces the severity of the information asymmetry. Foreign equity investors, being "close to the action", have greater knowledge of the underlying investment and are better able to monitor it (Razin, Sadka and Yuen, 1998; Neumann, 2003).

[6]See, for instance, Alesina and Drazen (1991); Fernández-Villaverde, Garicano and Santos (2013); Vamvakidis (2008); Santos (2015).

country that receives one standard deviation more private debt inflows is 2.9 percentage points higher than in industries that rely the least on good governance. In contrast, the institutional benefits of capital inflows are muted in developed countries, where the institutional quality is already high and therefore potential gains are low. We also find that below a certain threshold of institutional quality—law and order in particular—the benefits of capital inflows disappear, and even turn negative. In other words, when certain pre-conditions are not met, an inflow of foreign capital, even when going to the private sector, might actually exacerbate the *ex-ante* institutional deficit.

Our findings are robust to a battery of extensions and robustness checks, including testing the sensitivity to sample composition, outliers, choice of variables, as well as to restricting the sample to before the Great Financial Crisis (using data only until 2005). More importantly, results are unaffected when we control for the other channels through which capital flows can directly affect industry growth, such as the relaxation of financing constraints. Finally, to mitigate potential reverse causality concerns, we rule out, among other things, the possibility that capital might systematically flow to the most institutionally dependent sectors. We also show that our results are robust when we use an ''exogenous'' measure of capital flows, as in Cesa-Bianchi, Ferrero and Rebucci (2018) and Cingano and Hassan (2020).

We contribute to the capital flows literature in several dimensions. To the best of our knowledge, we are the first to provide robust evidence supporting a link between foreign financing and the quality of local institutions. Reflecting the practical difficulties of testing this channel in the data, it has so far received relatively little attention in the empirical literature.[7] In particular, while there is significant evidence documenting how the quality of the recipient country's economic policies and institutions affects the composition, level and volatility of cross-border inflows,[8] little is known about the opposite relationship. A key contribution of our paper is to rely on the difference-in-difference methodology of Rajan and Zingales (1998) and a large panel of country-industry data to gauge the existence of such a link.[9] Using a large and granular dataset, which decomposes non-resident flows by

[7]An exception is Challe, Lopez and Mengus (2019) who find that persistent external deficits are followed by a decline in the quality of institutions. Vamvakidis (2008) also finds that increases in external debt are correlated with slowdowns in economic reforms. All those results, however, are derived at the aggregate level.

[8]See for instance Lane (2004), Wei (2006), Busse and Hefeker (2007), Alfaro, Kalemli-Ozcan and Volosovych (2008), Faria and Mauro (2009), and Faria, Mauro and Zaklan (2011).

[9]The Rajan and Zingales (1998) framework has been used in many different contexts, such as finance and growth (e.g., Beck and Levine, 2002; Eichengreen, Gullapalli and Panizza, 2011; Igan,

borrowing sector and type of flows, allows us to test our hypothesis more rigorously and assess the existence of threshold effects governing the link between foreign capital inflows and the quality of institutions.

Our findings also relate to two broad literatures. The first has emphasized the potential (adverse) effects of foreign aid on domestic institutions, reforms and growth. This includes, among others, Alesina and Drazen (1991), Casella and Eichengreen (1996), Easterly, Levine and Roodman (2004), Knack (2004), Rajan and Subramanian (2008, 2007), Djankov, Montalvo and Reynal-Querol (2008), Werker, Ahmed and Cohen (2009), Deaton (2013) and Jones and Tarp (2016).[10] The second suggests that capital flows can benefit private institutions by improving corporate governance practices at the firm level (Stulz, 2005; Doidge, Karolyi and Stulz, 2004; Morck, Wolfenzon and Yeung, 2005; Kim et al., 2010). Broadly speaking, we bridge the gap between these two strands of literature, while nuancing some of their findings. With respect to the first, our results suggest that flows to the official sector more generally, and not just aid, can have a negative impact on the quality of local institutions, and that this effect is not only present in poor countries. In fact, we find that this is also true in emerging markets. With respect to the latter, our results suggest that capital flows can benefit the private sector not only through their impact on the individual firm (such as better governance practices, or the relaxation of financing constraints), but also through the collateral institutional benefits they induce at the country level. However, we also find that those benefits do not always materialize and are subject to thresholds. In particular, countries with pre-existing institutional deficiencies might actually exacerbate the problem by letting foreign capital flow into their private sector.

The remainder of this paper is structured as follows. Section 2 describes the empirical methodology and the underlying data. We present our empirical results in Section 3, including our main results on capital flows and institutional quality, some extensions, and an investigation into the existence of an institutional threshold. Section 4 tests the sensitivity of our findings and delves into two common endogeneity issues–omitted variable bias and reverse causality–in more detail. Section 5 concludes.

Kutan and Mirzaei, 2020), human capital and growth (e.g., Ciccone and Papaioannou, 2009) or on the aid-institution nexus (e.g., Rajan and Subramanian, 2007).

[10] Others have also documented that windfalls, in particular commodity-related windfalls, can erode institutions, especially in countries with initially weak institutions (Sachs and Warner, 2001; Lane and Tornell, 1996; Ades and Di Tella, 1999; Acemoglu, Verdier and Robinson, 2004; and Mehlum, Moene and Torvik, 2006).

2. Empirics

2.1. Methodology

Inspired by the indirect evidence that aid flows might erode the quality of institutions in Rajan and Subramanian (2007), our methodology relies on estimating the impact of capital inflows on institutional quality indirectly through a difference-in-difference approach à la Rajan and Zingales (1998). A testable implication of the capital flows-induced institutional change is that industries that are structurally more dependent on good institutions to operate should profit disproportionately more when capital flows into the economy, even after controlling for other potential channels through which foreign capital might benefit them. We test this hypothesis by estimating the following panel-based fixed-effects model:

$$\Delta \ln(y_{i,j,t}) = \alpha + \beta(CF_{j,t} \times ID_i) + \mu(CF_{j,t} \times Controls_i) + \gamma \ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t} \quad (1)$$

where the dependent variable $\Delta \ln(y_{i,j,t})$ is the annual compounded growth rate of real value added in PPP-adjusted terms of industry i in country j in period t; ID_i is a proxy for the institutional dependence for each industry i; $CF_{j,t}$ is the average capital inflows-to-GDP ratio for that country in period t; $Controls_i$ is a vector of other important industry-specific characteristics; $\ln(y_{i,j,initial\,t})$ is the initial-period logarithm of real value added in PPP-adjusted terms and accounts for existing differences in the size of industries to capture the concept of growth convergence (large industries tend to grow less).[11]

Our coefficient of interest β, captures an interaction between a country-specific capital flow variable (CF) and an industry's dependence on the institutional environment (ID). This interaction terms allows for capital inflows to have differential effects across industries, depending on how reliant they are on domestic institutions. A positive value of β would imply that institutionally-dependent sectors grow faster than others when capital flows into the country and support our main hypothesis.

We use two sets of fixed effects: country-period dummies (θ_{jt}) to control for country-specific shocks affecting all industries in any given period (e.g., a macro-shock) and industry-

[11] Controlling for industry initial conditions captures mean reversion, structural change, or other secular factors of industry growth that could affect our results (Samaniego and Sun, 2019).

period fixed effects (θ_{it}) to control for global industry-specific shocks (e.g., demand shocks affecting a single industry around the world). Thus, our coefficient of interest β is identified from the within-country, cross-industry variation in institutional dependence. Importantly, with this difference-in-difference methodology, our estimates are only informative about the direction of the effects associated with capital inflows on the relative, as opposed to absolute, growth rate of industries in institutionally-dependent sectors. The direct effects of $CF_{j,t}$ and ID_i are absorbed by the set of fixed effects we employ. Eq. (1) is estimated using OLS with standard errors clustered at the country-industry level in order to account for the within country-sector correlation over time.[12]

As a benchmark, we estimate Eq. (1) using 3-year non-overlapping panel specifications, to allow for inertia in institutional quality. While industry growth varies in the short run, institutional quality tends to be persistent. Hence, it is reasonable to expect a lag between the entry of new foreign capital and its ultimate impact on institutions and, in turn, on industry performance.

2.2. Data

2.2.1. Manufacturing data: the UNIDO Database

Value added (VA) growth at the industry level comes from the Industrial Statistics of the United Nations Industrial Development Organization (UNIDO) database. While other alternatives such as the OECD Structural Analysis Database (STAN) or the KLEMS databases are often used in cross-country/industry analysis, the UNIDO database, coming from industrial surveys, covers both advanced and developing economies, and provides information on manufacturing industries at a more disaggregated level.

Specifically, we use the UNIDO INDSTAT2 2019 version, which covers 23 manufacturing industries at the International Standard Industrial Classification (ISIC) 2-digit level (revision 3.1).[13] The raw UNIDO data is cleaned using a number of standard steps, which are described in detail in Appendix B.1, following Ciccone and Papaioannou (2009) and Raddatz (2006). The annual average real value-added growth is computed as the annual compounded growth

[12] Our results are robust to clustering simultaneously at the country-industry and country-period level, or at the country-period level or country level only.

[13] The INDSTAT4 version provides more disaggregated data at the 4-digit level for up to 127 manufacturing sectors, but it has fewer countries and uneven coverage in earlier years.

rate in real value added for a period, i.e. defined as a 3-year average in our setting. We further impose that each country-period observation used in the regressions must have at least ten industries (out of 22) to ensure sufficient industry heterogeneity.[14]

Since industry-level data tends to be rather noisy, we winsorize the period average growth rates in real value-added at the 1st and 99th percentiles of the whole sample distribution. Furthermore, we follow the recommendation in Eichengreen, Gullapalli and Panizza (2011) and exclude the most extreme outliers from our analysis. Precisely, we first estimate our baseline specification Eq. (1) for all countries in our sample, recover the regression's residuals, compute their standard deviation, and ultimately drop all the observations which had residuals with an absolute value greater than four standard deviations (corresponds to 1.13% of observations, or 129 observations). Our final sample consists of an unbalanced panel of roughly 11,300 country-industry-period observations between 1985 and 2014. It covers 103 countries with data on at least 10 of 22 2-digit ISIC industries. Summary statistics along with the list of countries in our sample are provided in Appendix A.

2.2.2. Capital Flows and Other Country-level Data

We compile a comprehensive dataset of capital flows at an annual frequency based on IMF BOP data, using both BPM5 and BPM6 versions to maximize coverage. Since we are interested in the effect of foreign capital flows, we focus our attention on "gross" capital inflows, i.e. flows coming from non-residents. To explore the heterogeneity of the effects we capture, we also break down flows by borrowing sector (private or official), and type (e.g., equity or debt). Private sector flows include flows to banks and to the non-financial sector, whereas the official sector covers both monetary authorities and the central government. In practice, we focus on three measures of private capital inflows: (i) all inflows, (ii) equity flows, defined as the sum of FDI and portfolio equity investments, and (iii) debt flows, defined as the sum of portfolio debt investments and other investment. All capital flow variables are expressed as a fraction of GDP. The period average capital flows for each country is computed as the simple arithmetic average of yearly figures, imposing the use of at least two years of non-missing data. To reduce the influence of outliers in gross capital flows, we

[14] In our sample, the 10th percentile for the number of industries per country-period is 15 and the median is 18.7, while for the least-developed countries sub-sample, where coverage is spottier, the 10th percentile is 13 and the median is 16.8.

exclude financial centers following the classification of Lane and Milesi-Ferretti (2018).[15] Further details can be found in Appendix B.4.

Regarding measures of institutional quality at the country level, we resort to the International Country Risk Guide (ICRG) data developed and maintained by Political Risk Service.[16] Following Knack and Keefer (1995), four components of political risk in the ICRG database are used to measure a country's overall institutional environment, namely: (1) the Investment Profile index which captures the risk to investment by outright expropriation of assets, payment delays, and restrictions on profit repatriation; (2) the Law and Order index which assesses both the strength and impartiality of the legal system and the popular observance of the law, and can therefore be interpreted as a measure of the rule of law or judicial capacity; (3) the Corruption index which reflects the likelihood that officials will demand illegal payment or will use their position or power to their own advantage; (4) the Bureaucratic Quality index which measures autonomy from political pressures and the strength and expertise of bureaucrats to govern without drastic interruptions in government services or policy changes. These indices are re-scaled on a common 0–10 scale, with higher values indicating better outcomes, and aggregated using equal-weights to form our composite Institutional Quality index. Finally, each subcomponent is normalized to be between 0 and 1 as is the overall index. Knack and Keefer (1995) use this aggregate indicator as an index of the security of contractual and property rights and better conditions for investment, while Hall and Jones (1999) term this as an index of government anti-diversion policies.

2.2.3. Institutional Dependence at the Industry Level

The validity of our identification strategy hinges crucially on plausible measures of an industry's dependence on its institutional environment. To construct them, we build on two important contributions from the trade literature, namely Levchenko (2007) and Nunn (2007). Levchenko (2007), building on Blanchard and Kremer (1997), argues that industries using a more "fragmented" production process rely on more contracts and are more subject to hold-up

[15] After combining capital flows data with our UNIDO sample, this step implies the exclusion of the following countries: the Bahamas, Belgium, Cyprus, Hong Kong, Luxembourg, Malta, Mauritius, Netherlands, Panama, Singapore, Switzerland, and the United Kingdom.

[16] This dataset constructed from surveys and expert assessments has been widely used in the literature and offers extensive coverage across countries and over time from 1982 onward. A commonly used alternative is the World Bank's Worldwide Governance Indicators (WGI) originally developed by Kaufmann, Kraay and Zoido-Lobatón (1999), but which dates back to 1998 only.

problems. Institutional dependence is therefore proxied with a measure of product complexity or input-concentration, computed as the industry's Herfindahl index of intermediate input use (times -1). For each manufacturing industry i, intermediate goods purchases from the other k industries are computed using the U.S. 1992 Input-Output (I-O) Use Table. The (inverse) Herfindahl index of concentration of purchases for each sector i is then calculated as the sum of the squares of the shares ϕ of the purchases of each input k in total input purchases of i:

$$HI_i = -1 \times \left(\sum_k \phi_{ik} \right)^2 \tag{2}$$

Intuitively, every time an intermediate good is purchased, institutions are needed to facilitate the transaction. A greater variety of goods needed for production implies that more parties are involved, and more contracts are needed. Conversely, less "complex" industries with very concentrated intermediate inputs can regulate manage transactions via long-term, repeated relationships or vertical integration, and thus do not need to rely as much on explicit governance by courts or regulatory authorities. As a result, in countries with little governance capacity, the loss of potential output due to imperfect contract enforcement is much greater for industries producing more complex goods (Cowan and Neut, 2007).

Nunn (2007) extends the incomplete contracting logic further and proposes a narrower measure of the extent to which hold-up problems can affect production. The focus is on the nature—rather than the variety—of intermediate inputs within an industry, and in particular the proportion of inputs requiring relationship-specific investment. To quantify this notion, Nunn adopts Rauch (1999)'s product classification, which distinguishes between homogeneous inputs for which substitutes are readily available on the open market (i.e., those sold on organized exchanges and/or with reference prices in trade publications) from residual goods that require suppliers to make relationship-specific costly investments to customize the goods for final good producers. Using information from the U.S. 1997 I-O Use Table, our measure of relationship-specific investment intensity across industries is constructed as follows:

$$RS_i = \sum_k \theta_{ik} (R_j^{\text{neither}} + R_j^{\text{ref price}}) \tag{3}$$

where $\theta_{ik} = u_{ik}/u_i$, with u_{ik} being the value of input k used in industry i and u_i being the total value of all inputs used in industry i. This measure classify inputs that are reference-priced and inputs that are neither bought and sold on an exchange nor reference-priced as being relationship-specific.

Combining these institutional dependence proxies with data on trade flows and on the quality of judicial institutions in a country, Levchenko (2007), Nunn (2007), and Chor (2010) find convincing evidence that countries with better judicial quality or contract enforcement institutions specialize in the production (and export) of more complex goods and/or goods for which relation-specific investments are more important. We use both measures in our empirical analysis to capture the different dimensions of, and thus different sources of variation in, institutional quality (Bernard et al., 2007; Chor, 2010). Using the UNIDO industry classification, we closely reconstruct both measures using the U.S. 1997 I-O Use Table.[17] Details can be found in Appendix B.2.

We now turn to a careful examination of our measures. Table B.1 in the Appendix first reports the ordering of the two institution-dependence proxies for the different manufacturing industries in our sample, aggregated at the ISIC 3.1 2-digit level. The ordering of industries appears sensible. According to Levchenko (2007) input-concentration measure (HI), some of the most institution-dependent industries include ‘‘Machinery equipment (29)’’, ‘‘Furnitures (36)’’, ‘‘Motor vehicles (34)’’, while Nunn (2007) input relationship-specificity measure (RS) identifies ‘‘Office, accounting and computing machinery (30)’’, ‘‘Printing and publishing (22)’’ and ‘‘Medical, precision and optical instruments (33)’’ among the most institutionally intensive industries. The least institutionally intensive industries according to both metrics are ‘‘Coke, refined petroleum products, nuclear fuel (23)’’, ‘‘Textiles (17)’’, ‘‘Wood products (20)’’, ‘‘Tobacco products (16)’’, and ‘‘Food and beverages (15)’’. The two industry measures are highly correlated (0.62). We do find, however, some differences in the ranking of industries *within* each institutional proxy. Assumptions and choices made at various levels of the construction of these proxies can have a large impact on the numerical value and ranking of

[17] These two measures are derived from U.S. Input-Output Table, but applied for all countries in our sample. As is standard in this literature, we assume that the existing structure of intermediate inputs use in the United States—and thus the rank order of institutional dependence across industries—carry over to the other countries in our dataset. This is a plausible assumption to the extent that these proxies reflect technological differences across sectors. While a benchmarking bias might exist and raise questions about its applicability to developing economies, the U.S. data allows us to introduce some degree of exogeneity and to identify the industry composition of input demand driven by the technological characteristics of various industries, rather than by the institutional environment. Thus, even if input-output data were available for other countries in our sample, making this proxy country-specific would raise endogeneity concerns.

industries.[18] To circumvent those issues, we conduct most of our analysis using a discrete version of both ID proxies after classifying industries into three groups of equal size. We show in the robustness section that results using the continuous version of ID are consistent, both qualitatively as well as quantitatively, with our findings based on the discrete version.

We also test formally that our measures are valid proxies of institutional dependence. As argued in Rajan and Subramanian (2007), if this is the case, then countries that have better institutions should see faster growth in industries that are more institution intensive. We thus regress the average growth rate of industry i in country j in period t on a country-specific measure of institutional quality—our composite of the ICRG measures of governance quality—interacted with the industry-specific measure of institution-dependence. We control for the initial log value added of each industry, country-period and industry-period fixed effects, and we also augment this specification with an interaction between initial per capita GDP and the institution-dependence to check whether the country measure of institutional quality is just a proxy for its income.

Table B.2 in the Appendix reports results using both ID proxies in continuous form (Panel A) and as a tercile-based categorical variable (Panel B). We find that the interaction term is generally positive and statistically significant across all specifications, suggesting that growth is stronger in institution-dependent industries in countries that have better institutions. Results are stronger when ID proxies enter the regressions as terciles rather than in continuous form. Panel B shows that the interaction term (*2.ID*) is significant at the 1 percent confidence level and robust across the two ID proxies. It is also robust to controlling for the interaction with initial per capita GDP. Quantitatively, using column 5 estimates, we find that annual growth in the group of institution intensive industries—in a country that is one standard deviation above average in terms of institutional quality—is 2.1 percentage points higher than in the group with the least institution-dependent industries. This is a sizable effect, given that the average annual growth rate of industries is 4 percent and the median annual growth rate is 2.2 percent in our sample. The coefficient on the initial level of value added also has the expected (negative) sign and is statistically significant, indicating that large industries tend to grow less.

[18] This includes the choice of correspondence tables, aggregation techniques as well as assumptions about how measurement error is distributed across industries. Working with only 22 industries also implies that a few sectors can have a disproportionate impact on the results. This, for instance, is the case for the petroleum industry (ISIC 23) which is the least institutionally intensive industry by a large margin, according to both metrics. See Appendix B.2 for further details.

Overall, both ID measures appear plausible proxies of an industry's reliance on the institutional environment, thereby giving us greater confidence that, when applied to our difference-in-difference estimations, institutional quality arises as the main mediating channel through which capital inflows affects the relative growth rate of these industries.

2.2.4. Other Industry Characteristics

There are many potential channels through which capital inflows may influence industry growth. One concern is that our measure of institutional dependence may be capturing, at least partially, other important dimensions of heterogeneity across industries. To address this issue, we construct six other industry characteristics and use them as controls in Eq. (1) to run various robustness tests: (i) reliance on external finance (EFD), (ii) liquidity needs (LIQ), (iii) asset-tangibility intensity (FIX), (iv) physical capital intensity (PCI), (v) human capital intensity (HCI), and (vi) R&D intensity (RDI).

EFD, LIQ , FIX and RDI measures are constructed for the median publicly-listed company in the Compustat database. External finance dependence is defined by Rajan and Zingales (1998) as the share of capital expenditures not financed with cash flow from operations. Following Kroszner, Laeven and Klingebiel (2007), we use the measure of an industry's liquidity needs introduced by Raddatz (2006), and calculated as the ratio of a firm's total inventories to annual sales. Asset tangibility records the share of net property, plant and equipment in total book-value of assets (Baker and Wurgler, 2002; Braun, 2005; Braun and Larrain, 2005), while R&D intensity is defined as R&D expenditures divided by capital expenditures (Ilyina and Samaniego, 2011). For each measure, we take the average value of the firm-level yearly ratios over the 1980–1999 period, thereby smoothing any temporal fluctuations, and use the median value across U.S. firms in each sector as the proxy for the whole industry. Factor intensities of production across industries are computed from NBER-CES Manufacturing Industry Database (Bartelsman and Gray, 1996), and averaged over the 1980–1999 period. Physical capital intensity is the total real capital stock over total value added in each industry (Nunn, 2007; Ciccone and Papaioannou, 2009), while skill intensity is measured as the ratio of non-production worker wages to total wages (Nunn, 2007; Ferguson and Formai, 2013).

To make these other industry characteristics comparable to the institutional dependence measures, we transform them into tercile dummies.[19] Appendix B.3 provides a detailed discussion on the construction of these industry measures and Table B.7 lists their values and ranks aggregated at the ISIC 3.1 2-digit level. The rank correlations of our ID proxies with other industry variables are reported in Table B.6 in the Appendix, and are in general intuitive and consistent with what theory would predict. For instance, an industry that is more institutionally dependent tends to be more intensive in R&D and human capital and to rely less heavily on physical capital or fixed assets.

3. Results

3.1. Private Capital Flows and Institutional Quality

Table 1 presents the regression results after estimating our baseline specification Eq. (1) for all countries in our sample. We assess how the introduction of industry characteristics other than institution dependence affects our coefficient of interest in the Robustness section.

We first focus on the impact of aggregate flows to the private sector in column (1). Our coefficient of interest—the coefficient attached to the interaction term $CF \times ID$—is positive and statistically significant for both institution-dependence proxies, *HI* and *RS*. The difference in growth between the most and the least institution-dependent industries, captured by the coefficient on the last tercile (i.e., *2.ID*), is generally higher. Thus, manufacturing industries that are relatively more dependent on efficient contract enforcement and good governance grow markedly more when foreign capital flows into the country. We also decompose aggregate gross inflows into its debt and equity components (in the form of FDI).[20] Columns (3) and (5) reveal that this result is mainly driven by private debt inflows. Based on column (3), we estimate that the most institution-dependent industries in a country that receives one standard deviation more private debt inflows grows, on average, 1.3 percentage points faster per year than industries that rely less on institutions to operate. This result is quite sizeable when compared to the average and median annual growth rate of manufacturing industries in our sample (3.9 and 2.2 percent, respectively). By contrast, the effect of foreign

[19] Using these other industry characteristics in continuous form instead does not affect the results.

[20] We obtain similar findings to FDI-related capital inflows when using instead the total equity segment that sums FDI with foreign equity portfolio investments.

equity-related flows (direct and portfolio), and in particular FDI, on the relative growth rates of institution-intensive industries is quantitatively weaker, not robust across institutional proxies and not statistically significant.[21]

Are we really capturing an institutional channel? To support this interpretation, we saturate our baseline specification with an interaction between a country's institutional quality and the institutional dependence intensity (Rajan and Subramanian, 2007, 2011). Assuming foreign financing, in particular private debt inflows, work by improving the quality of domestic institutions, the presence of this additional interaction term should absorb, or at least weaken, the direct effect of $CF \times ID$. As can be seen from columns (2) and (4) in Table 1, this is the case. When introducing $INST \times ID$, the magnitude of our main coefficient declines substantially along with its statistical significance. This is consistent with an institutional quality channel of capital flows, ultimately leading to the differential growth patterns we observe on institution-dependent industries.

The marked difference on the impact of debt and equity flows supports this interpretation. When information asymmetry and monitoring costs are high, foreign investment is more likely to take the form of equity contracts, in particular FDI. Foreign equity investors, by being ''close to the action'', are endowed with greater knowledge of the underlying asset and are better able to monitor their investment.[22] Because of this informational advantage, equity flows are also less reliant on intermediaries and/or on the recipient country institutional environment.[23] This, in turn, implies less incentives for the recipient sector to push for better institutions. On the other hand, since debt flows preclude an ownership element, monitoring

[21]This resonates with the mixed results in the literature on the institutional effect of FDI flows. For instance, Demir (2016) finds no evidence of positive effects of FDI flows on host country institutions using bilateral flows at the country level but reports negative effects at the aggregate level for South-South flows, in particular in natural resource-rich countries. Malesky (2009) and Long, Yang and Zhang (2015) report positive effects while Olney (2013) reports negative effects.

[22]Extending the pecking order argument to international capital flows, several theoretical works highlight the role of information asymmetries across types of foreign investment, and suggest that FDI, and the transfer of control that it entails, can best circumvent foreigners' informational disadvantages and achieve less costly monitoring than other forms of capital flows, such as loans or debt instruments (Gordon and Bovenberg, 1996; Razin, Sadka and Yuen, 1998; Neumann, 2003).

[23]This is consistent with results from Daude and Fratzscher (2008) who find that FDI is the type of foreign capital that is most immune to the quality of domestic institutions and may act as a substitute. It also provides credence to Ju and Wei (2010)'s theoretical insights that weak local institutions can be bypassed by two-way capital flows, with domestic savings flowing abroad and domestic investment taking place via inward FDI. Albuquerque (2003) also argue that FDI is harder to expropriate due to its information intensity and partial inalienability, as opposed to bank loans and bonds which are assumed to be fully appropriable.

the underlying investment is harder. In addition, to the extent that debt flows are either intermediated by the financial sector (in the case of loans), or by financial markets (in the case of bonds) both in the host and source countries, our results may reflect the pressure intermediaries impose on the recipient's institutions.

To bring further support to our interpretation, we perform several tests. First, we investigate whether the effect of capital inflows is stronger in countries that are further away from the governance frontier, using a country's level of income as a proxy for overall institutional development. To do so, we re-estimate our baseline specification across three sub-samples—developed, emerging and least-developed countries—using a time-varying definition of the World Bank's income classification.[24] Table 2 presents the results. We find that the positive differential effect of private debt inflows in the whole sample is clearly driven by emerging economies, with the coefficient statistically significant at the 1 percent significance level for both ID proxies. Quantitatively, using estimates in column (6), we find that the annual growth rate of the most institutionally intensive industries in an emerging country that receives one standard deviation more private debt inflows is 2.9 percentage points higher. In contrast, the institutional benefits of capital inflows are muted in developed countries, where the institutional quality is already high and therefore potential gains are low or even absent. We also identify a positive effect of (equity) capital flows in the least-developed country sub-sample, but this result is only statistically significant when the input concentration measure (HI) is used and lacks robustness.[25]

Second, we check whether our results are specific to financing coming from abroad, using the change in domestic credit to the private sector (expressed as a fraction of GDP) as a proxy for the increase in the availability of local financing. We perform this check for two reasons. First, capital flows might happen in conjunction with a boom in local financing. In that case, the large effect we estimate using foreign flows might, at least partially, capture the impact of the increase in the availability of local funding. Second, foreign finance should come, if anything, with more pressure from outsiders.[26] As a result, we should expect that foreign

[24]See Section B.4 in the Appendix for a detailed definition.

[25]Table C.1 in the Appendix assesses the sensitivity of our core results to the sample composition. The differential effect of FDI inflows in the least-developed sample is not robust to country, nor period exclusion. In contrast, the positive and statistically significant effect of debt inflows in the emerging countries sample is robust across the 87 different sub-samples, and to the exclusion of commodity-intensive sectors (e.g., petroleum or fabricated metal products), where rent-seeking may be more prominent and the link between institutional quality and industry growth stronger.

[26]Relative to local investors, foreign investors may have stronger incentives to monitor given

finance comes with higher institutional benefits, as measured by the size and significance of the coefficient of interest. Table 3 reports the results. In the emerging countries sample, institution-dependent industries still grow disproportionately faster in countries hosting more non-resident debt flows. This stands in stark contrast with the insignificant differential effect of domestic private credit, suggesting that foreign and domestic credit booms might not be equivalent in terms of institutional benefits.

Third, we explore the reaction of institution-dependent industries when capital flows to the *official* sector. Intuitively, one would expect results to change drastically. If anything, foreign financing might relax the budget constraint of incumbents and weaken the incentives to push for institutional change.[27] In practice, flows going to the official sector also tend to come from sources that impose less discipline. Lending provided by other non-resident official lenders in particular, such as international financial institutions or bilateral creditors, can be prompted by decisions that are essentially non-market driven (see Alfaro, Kalemli-Ozcan and Volosovych, 2014; Gupta and Ratha, 2000).

We investigate this question using debt inflows to the official sector from BOP statistics, which covers both the monetary authority and the central government. We also resort to Avdjiev et al. (2018)'s data (henceforth AKV) which is based on the World Bank's International Debt Statistics (IDS) and the OECD's Development Assistance Committee database on official development assistance. In contrast to BOP statistics, the IDS data provides a decomposition of a country's long-term external debt by type of creditor (private vs. official creditors), but comes with the limitation that flows are provided in net forms and available only for the subset of countries classified by the World Bank as developing.[28]

Table 4 shows our results. As expected, the results differ markedly from the ones we obtain on non-resident flows to the private sector. On average, industries dependent on

their informational disadvantages (Bena et al., 2017) as well as stronger monitoring capabilities (Stulz, 2005). Moreover, foreign capital is particularly effective in imposing this kind of discipline given its footloose nature, especially for debt instruments, while domestic capital tends to have more restrictions to invest internationally (Schmukler et al., 2004; Albuquerque, 2003).

[27] In Alesina and Drazen (1991) war-of-attrition model, an increase in foreign debt alters the nature of the attrition game between different interest groups, relaxing the government's budget constraint and ultimately postponing otherwise necessary reforms. Santos (2015) stresses also a potential "political economy multiplier", in which liquidity surges facilitate the entrenchment of politicians and interest groups and weaken governance institutions. Fernández-Villaverde, Garicano and Santos (2013) find that large capital inflows entailing euro adoption in the eurozone periphery made fiscal constraints laxer, postponed reforms and led institutions to further deteriorate.

[28] The BOP- and AKV-based official flows measures are further discussed in the Data section 2.2.2 and Appendix B.4.

good institutions grow *less* than others in countries with higher flows to the official sector, with the effect being stronger in emerging markets. The coefficients are negative, albeit not statistically significant for the BOP-based official inflows measure. The size and strength of this effect increase when using the first net official flows measure from AKV when we do not distinguish by lender type.[29] We find a negative and statistically significant differential effect, especially in emerging markets. This, however, is mostly driven by flows to the official sector that come from another sovereign, as opposed to private creditors.

3.2. Is There an Institutional Threshold?

Results from the previous section have confirmed the existence of non-linearities in the way capital flows to the private sector can affect institutions, and suggest that the existence of thresholds below (or over) which the relationship between private flows and growth in institution-dependent industries vanish. We now turn to a more formal empirical analysis of the existence of such thresholds. Going beyond standard measure of income classifications, we investigate (i) if an institutional threshold exists and, if so, (ii) what institutional dimensions matter the most. To do so, in the spirit of Kose, Prasad and Taylor (2011) and Klein (2005), we explore the interaction between our variable of interest $CF \times ID$ and our composite measure of institutional quality (and its four constituents).[30]

Table 5 presents results specific to debt inflows to the private sector.[31] Panel A allows for a linear interaction between the institutional quality variables and our interaction of interest. The coefficients on the three-way interaction term are not significantly different from zero. Panel B introduces instead a quadratic interaction, which allows for the possibility that, beyond a certain level, the threshold variable becomes more or less important in determining

[29]The *mix-off* AKV measure consists of the PPG debt from both private and official creditors, the IMF credit, and the official aid grants, net of reserves. We find as well a negative differential effect when not including aid grants in this measure.

[30]An alternative to parametric specifications would be to use sample-splitting methodologies to endogenously determine the threshold (Hansen, 2000), which unfortunately cannot be applied to an unbalanced panel.

[31]The table only reports the triple interaction terms of interest for the sake of clarity, that is when $INST_{j,initial\,t}$ interacts with $CF \times 2.ID$. The regressions are run with all the lower level interaction terms. Note that the institutional threshold variable $INST_{j,initial\,t}$ is measured in the initial year of the respective period t and in relative terms. We standardize it within each time period based on the whole sample distribution of countries in ICRG data to allow for more meaningful comparisons over time and across countries. In doing so, the threshold values per se are difficult to interpret, as would have been the case with the raw institutional score.

the differential effect of capital flows on industry's growth. We find a clear threshold effect in the composite measure of institutional quality, driven especially by the "Law and Order" dimension. The coefficients on both the linear and quadratic interactions are strongly statistically significant for both governance dependence proxies (columns 5 and 6), with the first coefficient being positive and the second negative. In other words, the collateral benefits of debt inflows materialize only once the rule of law of the recipient country reaches a certain level. Quantitatively, we find that 36.1 percent of the least developed country observations (3-year averages) exceed the estimated lower threshold, while 57.2 percent of emerging market observations and 97 percent of the developed country observations do. The fact that roughly 60 percent of the observations for least-developed countries fall below the level of Law and Order at which benefits materialize could explain the imprecise estimates found earlier in Table 2 for this sub-sample.[32]

To visually examine the non-linear effects of the institution threshold variable, Figure 2 plots the conditional marginal effect of private debt flows on the industries most reliant on institutions against different initial levels of Law and Order. We find a clear inverted u-shape, with a negative effect at the lowest values of Law and Order (20.6 percent of the observations in the regression of column 5 are below the threshold) and positive effect for countries that have achieved a certain level of institutional quality but for which the institutional frontier is still far. The effect gets close to zero in countries where the institutional quality is already very high—and therefore potential gains are low.[33] This result suggests that when certain pre-conditions are not met, in particular when it comes to law and order, an inflow of foreign capital—even when going to the private sector—can actually exacerbate the *ex-ante* institutional deficit and push countries to specialize even more in industries that are less reliant on a good contracting environment.

Several mechanisms could explain the absence of—and even negative—impact of capital

[32]Alternatively, we examine interactions of $CF \times ID$ with the institution threshold variable used as a categorical variable, based on terciles or quintiles. Results further corroborate the presence of important threshold effects with the Law and Order institution variable. As opposed to the latter measure, we do not identify any robustly statistically significant threshold effects based on the other 3 components of the composite indicator, although corruption and investment profile seems to matter as well but to a lesser extent than the rule of law. Results are available upon request.

[33]Note that the upper threshold is an artifact of the quadratic specification. We also experiment with the inclusion of higher-order polynomials of the threshold variable. The coefficients on the cubic term are not statistically significant but their magnitudes generally show a flattening out of (rather than a decline in) the implied differential effect of debt flows on industry growth at high levels of the threshold variable.

flows. In countries with severe institutional flaws, benefits from improving governance are generally weaker and capital flows are not sufficient to alter the political economy balance preserving incumbents' rents. In particular, foreign investors may not be able to exert much influence on host country institutions. Alternatively, institution-dependent industries, in particular, might lack the critical mass to induce institutional reforms. In a spirit similar to Braun and Raddatz (2008), which groups industries into "promoters" and "opponents" of financial development, we can compare, for countries below and above the identified threshold in law and order, the average value added share of the most institution-dependent industries to the least dependent ones. While the ratio of promoters to opponents is 0.50 for the countries below the threshold, the ratio climbs to 0.99 for the countries above, and the difference is statistically significant at the 1 percent significance level.

4. Robustness

4.1. Sensitivity Analysis

We perform several robustness checks to ensure that our benchmark result in Section 3, i.e. the positive effect of debt inflows on institution-dependent industries in emerging market economies, is not driven by the sample composition, the choice of variables, or by the econometric specification. Table 6 summarizes our results. Columns 3–4 restrict the sample period from 1985 to 2005. The exclusion of the 2008 financial crisis (and its preceding bubble) does not affect our findings—similarly for the exclusion of the Asian financial crisis period in columns 5–6. With respect to the sample of countries, our results are robust in columns 7–8 to excluding emerging countries with high oil and gas rents, in which rents as a fraction of GDP are higher than 15 percent (source: World Bank data), and in columns 9–10 to bringing back the countries listed as financial centers. Moreover, we confirm the robustness of the results to clustering simultaneously at the country-industry and country-period level (see columns 11–12) or at the country-period level only (see columns 13–14).

While our primary results are based on a discretized version of the ID proxies, columns 15–16 show that they are broadly robust, both qualitatively and quantitatively, to using their continuous counterparts. Specifically, the coefficient estimates in column 16 indicate that the annual growth rate of an industry that is one standard deviation higher in institutional dependence in an emerging market economy that has one standard deviation more private debt inflows is 1.27 percentage points higher. Columns 17–18 control for industry initial conditions using the initial-period share of an industry's value added in the country-level manufacturing value added, as originally done in Rajan and Zingales (1998). Columns 19–20 do not interpolate the value added data. Results are again unchanged.

We further confirm that the effect of private debt inflows is not sensitive to outliers. Columns 21–22 of Table 6 indicate that our results are similar when we use a least absolute deviation estimator that is less sensitive to influential observations than ordinary least squares. Table C.1 in the Appendix further confirms the robustness of the core results to the sample composition by excluding influential observations along country, industry, and time dimensions. Moreover, we show that the results are robust when we further winsorize the period average growth rates in real value-added at the 5th and 95th percentiles of the whole sample distribution (see columns 23–24). Although we excluded the most extreme outliers from the baseline analysis to ensure sufficient representativeness (Eichengreen, Gullapalli and Panizza, 2011), results are comparable when not applying this procedure (see colunms 25–26). Similarly, not winsorizing our two main variables leads to close estimates (see colunms 27–28). Finally, columns 29–30 reveal that our results remain when including emerging countries' industries with at least two periods of non-missing data available.

4.2. Omitted Variable Bias: Controlling for Other Channels

While the inclusion of fixed effects helps in addressing omitted variable bias, some issues remain when estimating the unconditional model specification in Eq. (1). The main concern is that our measure of institutional dependence may be spuriously capturing other industry characteristics, which are correlated with our ID proxies and react also positively to capital inflows. For instance, in a sample of 22 emerging market economies, Igan, Kutan and Mirzaei (2020) show that, in the pre-crisis period of 1998–2007, industries more reliant on external finance grow disproportionately more in countries that host more debt inflows. Assuming that more complex or more relationship-specific industries are also more financially constrained, our results might capture those benefits, rather than an institutional channel. Table 7 reports results using the augmented version of Eq. (1) in which, in addition to our interaction of interest $CF \times ID$, we include interactions of capital flows with each of the industry characteristics constructed in Section 2.2.4. We focus on the effects specific to debt flows in the emerging countries sub-sample.

Overall, we find that our coefficient of interest is unaffected. It remains highly statistically significant and of similar magnitude across specifications, suggesting that our measure of institutional dependence is not merely a proxy for other industry characteristics. Importantly, it changes little in magnitude and significance after controlling for external finance dependence (EFD), liquidity dependence (LIQ), asset tangibility (FIX), or R&D intensity (RDI), all of which have been used in the literature to proxy for common financial channels affecting industry growth (Braun, 2005; Ilyina and Samaniego, 2011; Samaniego and Sun, 2019).[34]

4.3. Alternative Explanations

This paper argues that foreign capital (and in particular debt) inflows affects the relative growth rate of institutionally-dependent industries through their impact on institutional quality, and provides several pieces of evidence to support this channel. Nevertheless, our interaction term could be picking up alternative stories. First, capital inflows, especially debt inflows, could systematically target industries that are more reliant on institutions. This could happen because those sectors are better understood in creditor countries, or if industries with superior growth prospects happen to be systematically related to our institutional dependence proxies. In that case, the superior growth we observe in these industries would be due to capital inflows themselves, and not to the potential effect capital flows have in improving institutions. Second, exogenous improvements in local institutions in period $t-1$ could improve growth in the most institution-dependent sectors relative to the least ones in period t. This, in turn, could attract capital flows to the host country in period t, resulting in institutions affecting capital inflows, rather than the other way around.

The use of industry-period fixed effects in our setting already controls for the possibility that some sectors, including the most institution dependent ones, grow disproportionately across all countries. However, it does not account for the possibility that country-specific capital flows are directed systematically towards some sectors. Assuming that the underlying reason that capital flows would systematically be attracted to the most ID sectors is that those are usually the ones with better growth prospects, we start to investigate in Table 8

[34]The interaction remains unaffected if industry characteristics enter the regressions in their continuous form. Results are available upon request.

the robustness of our baseline results after controlling for the role played by (exogenous) industry growth opportunities. In colunms 1–9, we assume that some components of growth opportunities are common across countries, implying the existence of global industry-specific shocks to growth opportunities. Colunms 1–3 use the actual growth in real sales for the representative firm in a given industry in the U.S., based on the argument in Fisman and Love (2004) that large publicly-traded U.S. firms are relatively free of financing constraints and react optimally to worldwide industry-specific shocks to growth opportunities, making the actual sales performance of these firms a good proxy for the global demand shocks/global growth opportunities that each industry is facing. Unlike the ID_i proxy, this global growth opportunities proxy for each industry GO_{it} varies over time, akin to Gupta and Yuan (2009), because global industry-specific demand shocks are likely to be temporal. We use the initial-period value of this variable so as to allow industries to adjust to demand shocks (Gupta and Yuan, 2009) and transform it into tercile dummies. Using sales growth interacted with capital inflows, we find that our baseline results on the interaction of capital inflows and institutional dependence remain intact.

As an additional growth opportunities GO_{it} proxy, we follow Bekaert et al. (2007) and collect from Datastream industry-level price-to-earnings (PE) ratios of the world market (WGO_{it}^{World}). Under the market integration hypothesis, Bekaert et al. (2007) argue that the global component of growth opportunities of a given industry should be competitively priced on global stock markets and reflected in the global industry's PE ratio; for which they provide empirical evidence that the opportunities are priced globally rather than locally. Similarly to U.S. sales growth, the world PE ratios are sector-specific and time-varying so that they should capture the evolution of the global (exogenous) growth potential of a given industry, independent of local economic conditions. But, in contrast to realized sales growth, the PE ratio is a forward-looking measure, capturing investors' ex-ante expectations of an industry's future growth opportunities. Table 8, colunms 4–6 report the results when horse-racing our main interaction term with the interaction between debt inflows and the GO_{it} proxy based on world industry PE (WGO_{it}^{World}), while colunms 7–9 use the Datastream's global emerging markets industry PE ($WGO_{it}^{Emerging}$). The estimated coefficient on our main interaction term remains positive and statistically significant.[35]

[35]See Appendix B.3 for the detailed construction of these global growth opportunities proxies. Note that our main interaction term remains unaffected if the GO_{it} proxy enter the regressions in continuous form, or if it is measured as the average value over period t instead of initial-period

Alternatively, and considering country- and industry-specific information, we re-estimate in Table 8 our baseline model after excluding, for each country and each period, the three largest industries (columns 10–11), the three industries that experienced the fastest growth in the previous period (columns 12–13), and the three industries that recorded the fastest labor productivity growth in the previous period (columns 14–15). It is less likely that the other smaller industries or the ones experiencing slower growth will be the pull factors for attracting foreign funds. Results show that debt inflows are still positively and significantly associated with the growth of institution-dependent industries in emerging countries.[36]

Furthermore, it is unlikely that supply-driven capital inflows would be driven initially by the growth prospects of certain industries. As such, we try to isolate the exogenous component of capital flows by projecting, for each country j in our sample, the country-specific debt inflows $CF_{j,t}$ on a constant and on a world capital flow measure over the entire sample period (as in Cesa-Bianchi, Ferrero and Rebucci, 2018; Cingano and Hassan, 2020).[37] Assuming country-specific pull factors from country j do not affect world capital flows, the fitted values $\hat{\lambda}_j \ CF_t^{\text{World}}$ can be interpreted as the exogenous component of debt inflows going into the country j private sector. The results in columns 16–17 of Table 8 confirm our basic findings for emerging economies: industries that are more dependent on institutions still grow disproportionately faster when they are located in countries that host greater (exogenous) debt inflows. This test also addresses our second concern, insofar as the coefficient on the fitted values $\hat{\lambda}_j \ CF_t^{\text{World}}$ can be interpreted as the estimated differential effect of the exogenous component of capital inflows that is also not linked to country-specific past institutional changes that could pull capital flows into the country.

Overall, these additional results support causality running from capital inflows to an improvement in domestic institutions that comes with a disproportionate growth of institution-dependent industries, rather than alternative interpretations based on a biased sectoral allocation of capital inflows (without any impact on institutional quality), or on reverse causality.

---

value. Results are available upon request.

[36]Similar results are found if we instead exclude the five largest or fastest-growing industries. Results are available upon request.

[37]For each country j, CF_t^{World} is built by aggregating debt inflows across all countries from our cleaned BOP sample (including financial centers) while excluding country j.

5. Conclusion

The conventional wisdom is that financial globalization and capital flows brings benefits to the recipient countries not only by relaxing financial constraints and transferring know-how but also by being a catalyst for better governance and institutions. This paper examines three decades of capital flows data in a large sample of countries to investigate if such an institutional quality channel exists. Our main finding that industries that are more dependent on good institutions grows more than other after foreign capital flows into the private sector supports the existence of such a channel. There are important threshold effects, however: the differential growth effect disappears and turns negative in countries with very low initial institutional quality. These findings underscore the importance of sequencing capital account liberalization with structural policies so that the recipient country can reap the benefits.

References

Acemoglu, Daron, Thierry Verdier, and James A Robinson. 2004. "Kleptocracy and divide-and-rule: A model of personal rule." *Journal of the European Economic Association*, 2(2-3): 162–192.

Ades, Alberto, and Rafael Di Tella. 1999. "Rents, competition, and corruption." *American Economic Review*, 89(4): 982–993.

Albuquerque, Rui. 2003. "The composition of international capital flows: risk sharing through foreign direct investment." *Journal of International Economics*, 61(2): 353–383.

Alesina, Alberto, and Allan Drazen. 1991. "Why are Stabilizations Delayed?" *American Economic Review*, 1170–1188.

Alfaro, Laura, Sebnem Kalemli-Ozcan, and Vadym Volosovych. 2008. "Why doesn't capital flow from rich to poor countries? An empirical investigation." *Review of Economics and Statistics*, 90(2): 347–368.

Alfaro, Laura, Sebnem Kalemli-Ozcan, and Vadym Volosovych. 2014. "Sovereigns, upstream capital flows, and global imbalances." *Journal of the European Economic Association*, 12(5): 1240–1284.

Avdjiev, Stefan, Bryan Hardy, Sebnem Kalemli-Ozcan, and Luis Servén. 2018. "Gross Capital Flows by Banks, Corporates and Sovereigns." BIS Working Paper No 760.

Baker, Malcolm, and Jeffrey Wurgler. 2002. "Market timing and capital structure." *Journal of Finance*, 57(1): 1–32.

Bartelsman, Eric J, and Wayne Gray. 1996. "The NBER manufacturing productivity database." NBER Working Paper No 0205.

Beck, Thorsten, and Ross Levine. 2002. "Industry growth and capital allocation:: does having a market-or bank-based system matter?" *Journal of Financial Economics*, 64(2): 147–180.

Bekaert, Geert, Campbell R Harvey, and Christian Lundblad. 2011. "Financial openness and productivity." *World Development*, 39(1): 1–19.

Bekaert, Geert, Campbell R Harvey, Christian Lundblad, and Stephan Siegel. 2007. "Global growth opportunities and market integration." *Journal of Finance*, 62(3): 1081–1137.

Bena, Jan, Miguel A Ferreira, Pedro Matos, and Pedro Pires. 2017. "Are foreign investors locusts? The long-term effects of foreign institutional ownership." *Journal of Financial Economics*, 126(1): 122–146.

Bernard, Andrew B, J Bradford Jensen, Stephen J Redding, and Peter K Schott. 2007. "Firms in international trade." *Journal of Economic Perspectives*, 21(3): 105–130.

Blanchard, Olivier, and Michael Kremer. 1997. "Disorganization." *Quarterly Journal of Economics*, 112(4): 1091–1126.

Blouin, Arthur, Sayantan Ghosal, and Sharun W. Mukand. 2017. "Globalization of Capital Flows, State Capacity and the (In)Disciplining of Nations." Working Paper.

Braun, Matias. 2005. "Financial contractability and asset hardness."

Braun, Matias, and Borja Larrain. 2005. "Finance and the business cycle: international, inter-industry evidence." *Journal of Finance*, 60(3): 1097–1128.

Braun, Matias, and Claudio Raddatz. 2008. "The politics of financial development: evidence from trade liberalization." *Journal of Finance*, 63(3): 1469–1508.

Busse, Matthias, and Carsten Hefeker. 2007. "Political risk, institutions and foreign direct investment." *European journal of political economy*, 23(2): 397–415.

Casella, Alessandra, and Barry Eichengreen. 1996. "Can foreign aid accelerate stabilisation." *The Economic Journal*, 106(436): 605–619.

Cesa-Bianchi, Ambrogio, Andrea Ferrero, and Alessandro Rebucci. 2018. "International credit supply shocks." *Journal of International Economics*, 112: 219–237.

Challe, Edouard, Jose Ignacio Lopez, and Eric Mengus. 2019. "Institutional quality and capital inflows: Theory and evidence." *Journal of International Money and Finance*, 96: 168–191.

Chor, Davin. 2010. "Unpacking sources of comparative advantage: A quantitative approach." *Journal of International Economics*, 82(2): 152–167.

Ciccone, Antonio, and Elias Papaioannou. 2009. "Human capital, the structure of production, and growth." *Review of Economics and Statistics*, 91(1): 66–82.

Cingano, Federico, and Fadi Hassan. 2020. "International financial flows and misallocation." *Working Paper*.

Cowan, Kevin, and Alejandro Neut. 2007. "Intermediate goods, institutions and output per worker." Banco Central de Chile Working Paper No 420.

Daude, Christian, and Marcel Fratzscher. 2008. "The pecking order of cross-border investment." *Journal of International Economics*, 74(1): 94–119.

Deaton, Angus. 2013. *The great escape: health, wealth, and the origins of inequality.* Princeton University Press.

Demir, Firat. 2016. "Effects of FDI flows on institutional development: does it matter where the investors are from?" *World Development*, 78: 341–359.

Djankov, Simeon, Jose G Montalvo, and Marta Reynal-Querol. 2008. "The curse of aid." *Journal of Economic Growth*, 13(3): 169–194.

Doidge, Craig, G Andrew Karolyi, and René M Stulz. 2004. "Why are foreign firms listed in the US worth more?" *Journal of Financial Economics*, 71(2): 205–238.

Easterly, William, Ross Levine, and David Roodman. 2004. "Aid, Policies, and Growth: Comment." *American Economic Review*, 94(3): 774--780.

Eichengreen, Barry, Rachita Gullapalli, and Ugo Panizza. 2011. "Capital account liberalization, financial development and industry growth: A synthetic view." *Journal of International Money and Finance*, 30(6): 1090–1106.

Faria, Andre, and Paolo Mauro. 2009. "Institutions and the external capital structure of countries." *Journal of International Money and Finance*, 28(3): 367–391.

Faria, Andre, Paolo Mauro, and Aleksandar Zaklan. 2011. "The external financing of emerging markets—evidence from two waves of financial globalization." *Review of Finance*, 15(1): 207–243.

Feenstra, Robert C, John Romalis, and Peter K Schott. 2002. "US imports, exports, and tariff data, 1989-2001." NBER Working Paper No 9387.

Ferguson, Shon, and Sara Formai. 2013. "Institution-driven comparative advantage and organizational choice." *Journal of International Economics*, 90(1): 193–200.

Fernández-Villaverde, Jesús, Luis Garicano, and Tano Santos. 2013. "Political credit cycles: the case of the Eurozone." *Journal of Economic Perspectives*, 27(3): 145–66.

Fisman, Raymond, and Inessa Love. 2004. "Financial development and intersectoral allocation: A new approach." *Journal of Finance*, 59(6): 2785–2807.

Giovanni, Julian di, and Andrei A Levchenko. 2009. "Trade openness and volatility." *Review of Economics and Statistics*, 91(3): 558–585.

Gordon, Roger H, and A Lans Bovenberg. 1996. "Why Is Capital So Immobile Internationally? Possible Explanations and Implications for Capital Income Taxation." *American Economic Review*, 1057–1075.

Gupta, Dipak Das, and Dilip Ratha. 2000. *What Factors Appear to Drive Private Capital Flows to Developing Countries?: And How Does Official Lending Respond?* Vol. 2392, World Bank Publications.

Gupta, Nandini, and Kathy Yuan. 2009. "On the growth effect of stock market liberalizations." *The Review of Financial Studies*, 22(11): 4715–4752.

Hall, Robert E, and Charles I Jones. 1999. "Why do some countries produce so much more output per worker than others?" *Quarterly Journal of Economics*, 114(1): 83–116.

Igan, Deniz, Ali M Kutan, and Ali Mirzaei. 2020. "The real effects of capital inflows in emerging markets." *Journal of Banking & Finance*, 119(105946).

Ilyina, Anna, and Roberto Samaniego. 2011. "Technology and financial development." *Journal of Money, Credit and Banking*, 43(5): 899–921.

Jones, Sam, and Finn Tarp. 2016. "Does foreign aid harm political institutions?" *Journal of Development Economics*, 118: 266–281.

Ju, Jiandong, and Shang-Jin Wei. 2010. "Domestic institutions and the bypass effect of financial globalization." *American Economic Journal: Economic Policy*, 2(4): 173–204.

Kaufmann, Daniel, Aart Kraay, and Pablo Zoido-Lobatón. 1999. *Aggregating governance indicators.* Vol. 2195, World Bank publications.

Kim, In Joon, Jiyeon Eppler-Kim, Wi Saeng Kim, and Suk Joon Byun. 2010. "Foreign investors and corporate governance in Korea." *Pacific-Basin Finance Journal*, 18(4): 390–402.

Klein, Michael W. 2005. "Capital account liberalization, institutional quality and economic growth: theory and evidence." NBER Working Paper No 11112.

Knack, Stephen. 2004. "Does foreign aid promote democracy?" *International Studies Quarterly*, 48(1): 251–266.

Knack, Stephen, and Philip Keefer. 1995. "Institutions and economic performance: cross-country tests using alternative institutional measures." *Economics & Politics*, 7(3): 207–227.

Kose, Ayhan, Eswar Prasad, and Ashley Taylor. 2011. "Thresholds in the process of international financial integration." *Journal of International Money and Finance*, 30(1): 147–179.

Kose, Ayhan, Eswar Prasad, Kenneth Rogoff, and Shang-Jin Wei. 2009. "Financial globalization: a reappraisal." *IMF Staff Papers*, 56(1): 8–62.

Kroszner, Randall S, Luc Laeven, and Daniela Klingebiel. 2007. "Banking crises, financial dependence, and growth." *Journal of Financial Economics*, 84(1): 187–228.

Lane, Philip R. 2004. "Empirical perspectives on long-term external debt." *Topics in Macroeconomics*, 4(1).

Lane, Philip R, and Aaron Tornell. 1996. "Power, growth, and the voracity effect." *Journal of Economic Growth*, 1(2): 213–241.

Lane, Philip R, and Gian Maria Milesi-Ferretti. 2018. "The external wealth of nations revisited: international financial integration in the aftermath of the global financial crisis." *IMF Economic Review*, 66(1): 189–222.

Levchenko, Andrei A. 2007. "Institutional quality and international trade." *Review of Economic Studies*, 74(3): 791–819.

Long, Cheryl, Jin Yang, and Jing Zhang. 2015. "Institutional impact of foreign direct investment in China." *World Development*, 66: 31–48.

Malesky, Edmund J. 2009. "Foreign direct investors as agents of economic transition: An instrumental variables analysis." *Quarterly Journal of Political Science*, 4: 59–85.

Mehlum, Halvor, Karl Moene, and Ragnar Torvik. 2006. "Institutions and the resource curse." *The Economic Journal*, 116(508): 1–20.

Mishkin, Frederic S. 2007. "Is financial globalization beneficial?" *Journal of Money, Credit and Banking*, 39(2-3): 259–294.

Morck, Randall, Daniel Wolfenzon, and Bernard Yeung. 2005. "Corporate Governance, Economic Entrenchment, and Growth." *Journal of Economic Literature*, 43(3): 655.

Neumann, Rebecca M. 2003. "International capital flows under asymmetric information and costly monitoring: implications of debt and equity financing." *Canadian Journal of Economics*, 36(3): 674–700.

Nunn, Nathan. 2007. "Relationship-specificity, incomplete contracts, and the pattern of trade." *Quarterly Journal of Economics*, 122(2): 569–600.

Obstfeld, Maurice. 1998. "The global capital market: benefactor or menace?" *Journal of Economic Perspectives*, 12(4): 9–30.

Olney, William W. 2013. "A race to the bottom? Employment protection and foreign direct investment." *Journal of International Economics*, 91(2): 191–203.

Qian, Yingyi, and Gerard Roland. 1998. "Federalism and the soft budget constraint." *American Economic Review*, 88(5): 1143–1162.

Raddatz, Claudio. 2006. "Liquidity needs and vulnerability to financial underdevelopment." *Journal of Financial Economics*, 80(3): 677–722.

Rajan, Raghuram, and Arvind Subramanian. 2007. "Does aid affect governance?" *American Economic Review*, 97(2): 322–327.

Rajan, Raghuram G, and Arvind Subramanian. 2008. "Aid and growth: What does the cross-country evidence really show?" *Review of Economics and Statistics*, 90(4): 643–665.

Rajan, Raghuram G, and Arvind Subramanian. 2011. "Aid, Dutch disease, and manufacturing growth." *Journal of Development Economics*, 94(1): 106–118.

Rajan, Raghuram G, and Luigi Zingales. 1998. "Financial Dependence and Growth." *American Economic Review*, 88(3): 559–586.

Rajan, Raghuram G, and Luigi Zingales. 2003. "The great reversals: the politics of financial development in the twentieth century." *Journal of Financial Economics*, 69(1): 5–50.

Rauch, James E. 1999. "Networks versus markets in international trade." *Journal of International Economics*, 48(1): 7–35.

Razin, Assaf, Efraim Sadka, and Chi-Wa Yuen. 1998. "A pecking order of capital inflows and international tax principles." *Journal of International Economics*, 44(1): 45–68.

Rodrik, Dani. 2013. "Unconditional convergence in manufacturing." *Quarterly Journal of Economics*, 128(1): 165–204.

Sachs, Jeffrey D, and Andrew M Warner. 2001. "The curse of natural resources." *European Economic Review*, 45(4-6): 827–838.

Samaniego, Roberto M, and Juliana Y Sun. 2019. "Uncertainty, depreciation and industry growth." *European Economic Review*, 120: 103314.

Santos, Tano. 2015. "Credit booms: Implications for the public and the private sector." BIS Working Paper No 481.

Schmukler, Sergio L, et al. 2004. "Financial globalization: Gain and pain for developing countries." *Federal Reserve Bank of Atlanta Economic Review*, 89(2): 39–66.

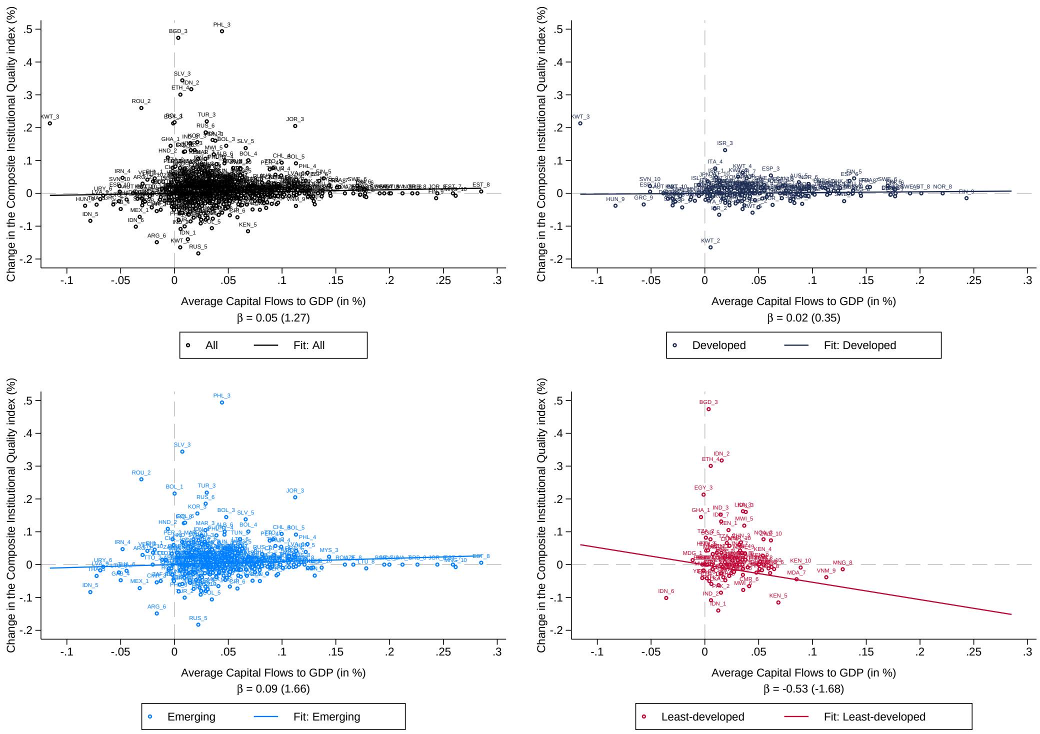
Stulz, René M. 2005. "The limits of financial globalization." *Journal of Finance*, 60(4): 1595–1638.

Vamvakidis, Athanasios. 2008. "External debt and economic reform: does a pain reliever delay the necessary treatment?" *Journal of Economic Policy Reform*, 11(3): 187–199.

Wei, Shang-Jin. 2006. "Connecting two views on financial globalization: Can we make further progress?" *Journal of the Japanese and International Economies*, 20(4): 459–481.

Werker, Eric, Faisal Z Ahmed, and Charles Cohen. 2009. "How is foreign aid spent? Evidence from a natural experiment." *American Economic Journal: Macroeconomics*, 1(2): 225–44.

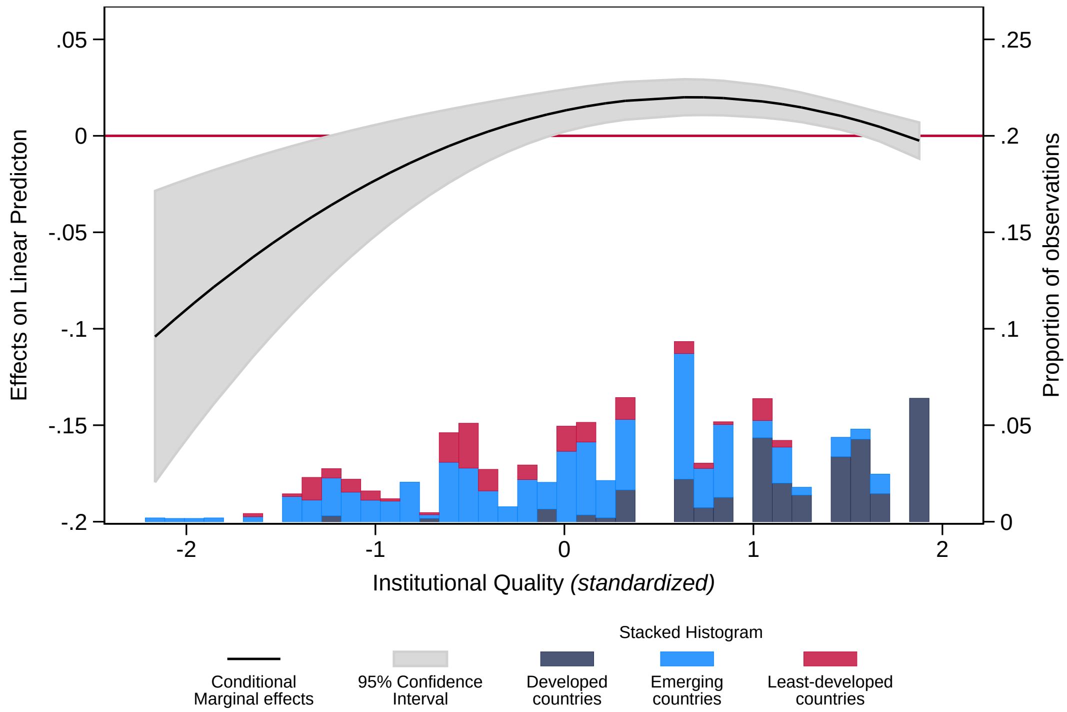
Figure 1. Capital Inflows to the Private Sector and Institutional Quality



Note: This plot represents the conditional relationships between total inflows to the private sector and changes in institutional quality (over a 3-year horizon). It is based on running a panel regression where the dependent variable is the 3-year change in institutional quality for a country, and the explanatory variables are the country's 3-year average total inflows to the private sector, the country's per capita PPP GDP, and fixed effects for the time period. Results are reported both for the full sample of countries and by income group (developed countries, emerging countries and least-developed countries using the World Bank's income classification). The composite measure of institutional quality equally weights four components of the political risk index in the ICRG database, namely: investment profile, law and order, corruption, and bureaucratic quality. Section 2.2 contains a comprehensive description of the underlying data.
Source: IMF's BOP data, ICRG data and own calculation.

Figure 2. Quadratic Interaction with Law and Order as the Threshold Variable, Private Debt Inflows

Coefficients (t-stats) on $CF \times 2.ID \times INST = 0.021$ (2.50), on $CF \times 2.ID \times INST^2 = -0.015$ (-3.50).



Note: This figure plots the conditional marginal effect of private debt inflows on the relative growth of institution-dependent industries against different initial relative levels of the Law and Order threshold variable (in terms of how far away from the mean, of zero by construction, a country is). Estimates are obtained from Table 5 in Panel B, column 5. To judge the common support of the moderator, the distribution of observations based on income groups is summarized in the stacked histogram.

Table 1. Capital Flows to the Private Sector and Industry Growth

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

Country Sample	**All Countries**					
Capital Flows type	Total Private inflows		Debt inflows		FDI inflows	
	(1)	(2)	(3)	(4)	(5)	(6)
***ID proxy (form)*: HI (3 cat.)**						
Initial Cond.$_{ijt}$	-0.033***	-0.035***	-0.033***	-0.035***	-0.033***	-0.035***
	(-14.48)	(-14.81)	(-14.40)	(-14.71)	(-13.76)	(-14.20)
$\mathrm{CF_{jt}} \times 1.\mathrm{ID_i}$	0.009**	0.007	0.004	0.001	0.008*	0.008*
	(2.07)	(1.54)	(1.08)	(0.30)	(1.78)	(1.77)
$\mathrm{CF_{jt}} \times 2.\mathrm{ID_i}$	0.015***	0.011**	0.013***	0.008**	0.006	0.006
	(3.55)	(2.47)	(4.01)	(2.36)	(1.35)	(1.35)
$\mathrm{INST_{jt}}^{\mathrm{Composite}} \times 1.\mathrm{ID_i}$		0.009**		0.011***		0.011***
		(2.48)		(2.80)		(3.02)
$\mathrm{INST_{jt}}^{\mathrm{Composite}} \times 2.\mathrm{ID_i}$		0.018***		0.019***		0.021***
		(4.81)		(4.77)		(5.41)
Within Adj. R^2	.052	.054	.052	.054	.05	.053
***ID proxy (form)*: RS (3 cat.)**						
Initial Cond.$_{ijt}$	-0.033***	-0.035***	-0.033***	-0.035***	-0.033***	-0.034***
	(-14.37)	(-14.62)	(-14.31)	(-14.51)	(-13.75)	(-14.03)
$\mathrm{CF_{jt}} \times 1.\mathrm{ID_i}$	0.012***	0.012***	0.008***	0.008***	0.009**	0.009**
	(3.15)	(3.16)	(2.60)	(2.65)	(2.21)	(2.18)
$\mathrm{CF_{jt}} \times 2.\mathrm{ID_i}$	0.012**	0.009*	0.011**	0.007	0.005	0.005
	(2.36)	(1.69)	(2.58)	(1.56)	(0.86)	(0.86)
$\mathrm{INST_{jt}}^{\mathrm{Composite}} \times 1.\mathrm{ID_i}$		-0.002		-0.002		-0.001
		(-0.67)		(-0.60)		(-0.25)
$\mathrm{INST_{jt}}^{\mathrm{Composite}} \times 2.\mathrm{ID_i}$		0.014***		0.014***		0.015***
		(3.23)		(3.18)		(3.60)
Within Adj. R^2	.052	.053	.051	.053	.05	.052
Observations	10623	10623	10581	10581	10267	10267
Countries	92	92	91	91	92	92
Industry-Time FE	yes	yes	yes	yes	yes	yes
Country-Time FE	yes	yes	yes	yes	yes	yes
#i per j,t (p1;p10;p50)	10;16;18.8		10;16;18.8		10;16;18.9	
#j per decade	52;65;77;66		52;65;77;65		45;64;77;66	
Dep. var. (avg; p50)	0.039; 0.022		0.039; 0.022		0.039; 0.022	

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table reports the results of estimating $\Delta\ln(y_{i,j,t}) = \alpha + \beta(CF_{j,t} \times ID_i) + \gamma\ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. $\Delta\ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. $\ln(y_{i,j,initial\,t})$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $CF_{j,t}$ is the arithmetic average private capital inflows-to-GDP-ratio for that country in period t. $x.ID_i$ is a proxy for the institutional dependence for each industry i in tercile-based form. The baseline specification is also augmented with the interaction term $\omega(INST_{j,t} \times ID_i)$, where $INST_{\mathrm{jt}}$ is the arithmetic average of our composite institutional quality measure for country j in period t. $CF_{j,t}$ and $INST_{\mathrm{j,t}}$ are both standardized so that the coefficients of the interaction terms $(2.ID)$ measure the differential effects of a one standard deviation increase in the j,t variable on the relative growth rate of the most institutionally-dependent sectors compared to the least ones. All regressions are estimated using OLS and include industry-period and country-period fixed effects. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

Table 2. Capital Flows to the Private Sector Decomposed and Country Aggregates

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

ID form	**ID 3 categories**							
Country Samples	**All**		**Developed**		**Emerging**		**Least-developed**	
	HI	RS	HI	RS	HI	RS	HI	RS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Private inflows								
$CF_{jt} \times 1.ID_i$	0.011**	0.011***	-0.015**	0.006	0.014**	0.019***	0.034***	0.010
	(2.39)	(3.14)	(-2.10)	(1.21)	(2.34)	(4.26)	(2.89)	(0.65)
$CF_{jt} \times 2.ID_i$	0.015***	0.012**	-0.000	-0.009	0.012**	0.020***	0.041***	0.022
	(3.55)	(2.38)	(-0.08)	(-1.53)	(2.27)	(2.94)	(2.89)	(1.42)
Observations	11334		3269		6297		1758	
Countries	104		29		69		29	
Within Adj. R^2	.053		.018		.051		.123	
Dep. var. (avg; p50)	0.041; 0.023		0.008; 0.006		0.046; 0.034		0.087; 0.051	
Debt inflows								
$CF_{jt} \times 1.ID_i$	0.005	0.009***	-0.014**	0.001	0.014**	0.019***	-0.004	0.009
	(1.22)	(2.88)	(-2.39)	(0.29)	(2.53)	(4.47)	(-0.34)	(0.69)
$CF_{jt} \times 2.ID_i$	0.014***	0.012***	0.001	-0.015**	0.019***	0.029***	0.015	0.003
	(4.38)	(2.85)	(0.27)	(-2.37)	(4.13)	(4.61)	(1.04)	(0.22)
Observations	11261		3249		6244		1758	
Countries	103		28		69		29	
Within Adj. R^2	.055		.019		.054		.115	
FDI inflows								
$CF_{jt} \times 1.ID_i$	0.010**	0.008*	-0.006	0.003	0.007	0.011**	0.041***	0.005
	(2.12)	(1.94)	(-1.26)	(0.78)	(1.12)	(2.32)	(3.19)	(0.33)
$CF_{jt} \times 2.ID_i$	0.005	0.003	-0.002	0.004	-0.002	0.001	0.041***	0.020
	(1.00)	(0.64)	(-0.52)	(0.82)	(-0.40)	(0.20)	(2.80)	(1.22)
Observations	10935		3224		6190		1512	
Countries	104		29		69		29	
Within Adj. R^2	.052		.013		.048		.134	
Industry-Time FE	yes	yes	yes	yes	yes	yes	yes	yes
Country-Time FE	yes	yes	yes	yes	yes	yes	yes	yes
Initial Conditions	yes	yes	yes	yes	yes	yes	yes	yes

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table reports the results of estimating $\Delta \ln(y_{i,j,t}) = \alpha + \beta(CF_{j,t} \times ID_i) + \gamma \ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. $\Delta \ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. $\ln(y_{i,j,initial\,t})$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $CF_{j,t}$ is the arithmetic average private capital inflows-to-GDP-ratio for that country in period t. $x.ID_i$ is a proxy for the institutional dependence for each industry i in tercile-based form. $CF_{j,t}$ variables are standardized so that the coefficients of the interaction terms $(2.ID)$ measure the differential effects of a one standard deviation increase in capital inflows on the relative growth rate of the most institutionally-dependent sectors compared to the least ones. All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

Table 3. Foreign vs. Domestic Financing, Private Debt Inflows to Emerging Countries

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

Country Sample – Capital inflows	**Emerging countries – Debt Inflows**			
	HI	HI	RS	RS
	(1a)	(1b)	(2a)	(2b)
$CF_{jt} \times 1.ID_i$	0.015^{***}	0.015^{**}	0.018^{***}	0.015^{***}
	(2.66)	(2.46)	(3.99)	(3.13)
$CF_{jt} \times 2.ID_i$	0.017^{***}	0.015^{***}	0.023^{***}	0.023^{***}
	(3.26)	(2.81)	(3.39)	(3.34)
$\triangle Dom.Credit_{jt} \times 1.ID_i$		0.001		0.009^{**}
		(0.22)		(2.30)
$\triangle Dom.Credit_{jt} \times 2.ID_i$		0.005		-0.003
		(1.10)		(-0.44)
Observations	5476	5476	5476	5476
Nb. Countries	65	65	65	65
Within Adj. R^2	.05	.05	.052	.052
Industry-Time FE	yes	yes	yes	yes
Country-Time FE	yes	yes	yes	yes
Initial Conditions	yes	yes	yes	yes

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table reports the results of estimating $\Delta \ln(y_{i,j,t}) = \alpha + \beta(CF_{j,t} \times ID_i) + \kappa(\triangle Dom.Credit_{j,t} \times ID_i) + \gamma \ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. $\Delta \ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. $\ln(y_{i,j,initial\,t})$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $CF_{j,t}$ is the arithmetic average private capital inflows-to-GDP-ratio for country j in period t. $Dom.Credit_{j,t}$ is the change in domestic credit to the private sector expressed as a fraction of GDP for that country in period t. $x.ID_i$ is a proxy for the institutional dependence for each industry i in tercile-based form. CF and $\triangle Dom.Credit$ variables are standardized so that the coefficients of the interaction terms ($2.ID$) measure the differential effects of a one standard deviation increase in capital inflows or in domestic credit on the relative growth rate of the most institutionally-dependent sectors compared to the least ones. All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

Table 4. Capital Flows to the Official Sector Decomposed and Country Aggregates

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

ID form	ID 3 categories							
Country Samples	All		Developed		Emerging		Least-developed	
	HI	RS	HI	RS	HI	RS	HI	RS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Official Debt inflows								
$CF_{jt} \times 1.ID_i$	-0.008**	-0.001	0.006	0.002	-0.007	-0.000	-0.047***	-0.013
	(-2.11)	(-0.30)	(1.14)	(0.64)	(-1.43)	(-0.05)	(-3.36)	(-1.06)
$CF_{jt} \times 2.ID_i$	-0.006	-0.006	0.001	0.005	-0.008	-0.011*	-0.028*	-0.032
	(-1.60)	(-1.38)	(0.32)	(0.77)	(-1.59)	(-1.89)	(-1.92)	(-1.64)
Observations	11155	11155	3227	3227	6161	6161	1758	1758
Countries	103	103	28	28	69	69	29	29
Within Adj. R^2	.053	.053	.016	.016	.052	.052	.12	.116
Official Debt net inflows ***(AKV, mix-off flows)***								
$CF_{jt} \times 1.ID_i$	-0.013**	-0.004			-0.012*	-0.005	-0.014	-0.019*
	(-2.44)	(-0.92)			(-1.90)	(-0.91)	(-1.09)	(-1.73)
$CF_{jt} \times 2.ID_i$	-0.016***	-0.020***			-0.015**	-0.022***	-0.020	-0.020
	(-2.78)	(-2.78)			(-2.55)	(-3.12)	(-1.48)	(-1.09)
Observations	7629	7629			5790	5790	1790	1790
Countries	81	81			65	65	30	30
Within Adj. R^2	.084	.084			.056	.057	.147	.147
Official Debt net inflows ***(AKV, off-off flows)***								
$CF_{jt} \times 1.ID_i$	-0.014***	-0.003			-0.012**	-0.003	-0.015	-0.019*
	(-2.59)	(-0.66)			(-1.99)	(-0.47)	(-1.19)	(-1.77)
$CF_{jt} \times 2.ID_i$	-0.015**	-0.020***			-0.013**	-0.022***	-0.020	-0.022
	(-2.52)	(-2.75)			(-2.29)	(-3.19)	(-1.44)	(-1.15)
Observations	7628	7628			5789	5789	1790	1790
Countries	81	81			65	65	30	30
Within Adj. R^2	.084	.084			.056	.057	.147	.147

Continued on next page

Table 4. (*continued*) Capital Flows to the Official Sector Decomposed and Country Aggregates

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

ID form	ID 3 categories							
Country Samples	**All**		**Developed**		**Emerging**		**Least-developed**	
	HI	RS	HI	RS	HI	RS	HI	RS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Official Debt net inflows ***(AKV, pri-off flows)***								
$CF_{jt} \times 1.ID_i$	0.003	-0.003			0.001	-0.005	0.017	0.007
	(0.78)	(-0.79)			(0.13)	(-1.01)	(1.51)	(0.59)
$CF_{jt} \times 2.ID_i$	-0.004	-0.001			-0.006	-0.004	-0.001	0.012
	(-0.91)	(-0.11)			(-1.14)	(-0.70)	(-0.10)	(0.78)
Observations	7641	7641			5845	5845	1749	1749
Countries	81	81			65	65	30	30
Within Adj. R^2	.079	.079			.052	.052	.147	.147
Industry-Time FE	yes	yes	yes	yes	yes	yes	yes	yes
Country-Time FE	yes	yes	yes	yes	yes	yes	yes	yes
Initial conditions	yes	yes	yes	yes	yes	yes	yes	yes

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table reports the results of estimating $\Delta \ln(y_{i,j,t}) = \alpha + \beta(CF_{j,t} \times ID_i) + \gamma \ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. $\Delta \ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. $\ln(y_{i,j,initial\,t})$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $CF_{j,t}$ is the arithmetic average official capital inflows-to-GDP-ratio for that country in period t. $x.ID_i$ is a proxy for the institutional dependence for each industry i in tercile-based form. $CF_{j,t}$ variables are standardized so that the coefficients of the interaction terms ($2.ID$) measure the differential effects of a one standard deviation increase in capital inflows on the relative growth rate of the most institutionally-dependent sectors compared to the least ones. All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

Table 5. Interaction Functions with the Institution Threshold Variable

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

Country Sample — Capital inflows	**All countries — Debt Inflows**			
INST variable (initial period)	**Composite**		**Law & Order**	
	HI	RS	HI	RS
	(1)	(2)	(3)	(4)
A. Linear interaction				
$CF_{jt} \times 2.ID_i$	0.011**	0.016**	0.007	0.010
	(2.04)	(2.11)	(1.29)	(1.23)
$CF_{jt} \times 2.ID_i \times c.INST_{jt}$	-0.003	-0.009*	0.003	-0.002
	(-0.89)	(-1.86)	(0.61)	(-0.29)
B. Quadratic interaction				
$CF_{jt} \times 2.ID_i$	0.011**	0.014*	0.013**	0.013*
	(2.01)	(1.80)	(2.34)	(1.76)
$CF_{jt} \times 2.ID_i \times c.INST_{jt}$	0.016	0.021	0.021**	0.027**
	(1.58)	(1.61)	(2.50)	(2.37)
$CF_{jt} \times 2.ID_i \times c.INST_{jt}{}^2$	-0.010**	-0.015***	-0.015***	-0.021***
	(-2.55)	(-2.80)	(-3.50)	(-3.49)
INST cutoffs at which the overall	-0.53	-0.48	-0.47	-0.38
coeff. of $CF \times 2.ID$ is zero:[a]	2.08	1.88	1.81	1.68
% observations above lower cutoff				
Least-developed countries	35%	32.4%	36.1%	36.1%
Emerging countries	63.2%	56.7%	57.2%	57.2%
Developed countries	99.5%	99.5%	97%	97%

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table reports the results of estimating $\Delta \ln(y_{i,j,t}) = \alpha + g(CF_{j,t} \times ID_i, INST_{j,initial\,t}) + \gamma \ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. The interaction function g is defined in Panel A as a linear interaction between our differerential effect of interest $CF \times ID$ and the institution variable threshold $INST$, and as a quadratic interaction in panel B. $\Delta \ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. $\ln(y_{i,j,initial\,t})$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $x.ID_i$ is a proxy for the institutional dependence for each industry i in tercile-based form. $CF_{j,t}$ is the arithmetic average private capital inflows-to-GDP-ratio for that country in period t and is standardized on the whole final sample distribution. $INST_{j,initial\,t}$ is a vector of *initial* and *relative* institutional quality variables for country j in period t; i.,e. the institutional variable is measured at the initial year of the respective period and we further standardized it within each time period based on the whole sample distribution of countries in ICRG data to allow for more meaningful comparisons over time and across countries. All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$. For space considerations, we report the results only for the interaction functions on the differential coefficient of interest, that is $CF \times 2.ID$ and also omit reporting all the lower level interaction terms. [a]Cutoffs are not available if the overall estimated coefficient of $CF \times 2.ID$ as a function of the threshold variable does not have a quadratic root.

Table 6. Robustness Checks, Debt Inflows to the Private Sector in Emerging Countries

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

Country Sample	**Emerging Countries**									
Capital Flows type	**Private Debt Inflows**									
Robustness	Baseline results		Sample period: 1985–2005		Excluding Asian Crisis (97-99)		Excluding oil producers		Including OFC countries	
	HI	RS	HI	RS	HI	RS	HI	RS	HI	RS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$CF_{jt} \times 1.ID_i$	0.014**	0.019***	0.010	0.020***	0.016**	0.021***	0.015***	0.018***	0.014**	0.016***
	(2.53)	(4.47)	(1.58)	(3.76)	(2.51)	(4.69)	(2.61)	(4.15)	(2.31)	(3.31)
$CF_{jt} \times 2.ID_i$	0.019***	0.029***	0.015***	0.025***	0.020***	0.032***	0.019***	0.027***	0.015***	0.019***
	(4.13)	(4.61)	(2.68)	(3.59)	(4.03)	(4.93)	(3.94)	(4.35)	(3.14)	(2.74)
Observations	6244	6244	4118	4118	5581	5581	5810	5810	6667	6667
Nb. Countries	69	69	55	55	69	69	59	59	74	74
Within Adj. R^2	.054	.057	.041	.045	.061	.065	.056	.059	.047	.048
$\delta_{i,t} + \delta_{j,t}$ FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Initial Conditions	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Robustness	Cluster SE $i \times j$ & $j \times t$		Cluster SE $j \times t$		Continuous ID		Initial cond. ind. share		Without interpolation	
	HI	RS	HI	RS	HI	RS	HI	RS	HI	RS
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
$CF_{jt} \times 1.ID_i$	0.014***	0.019***	0.014***	0.019***			0.017***	0.018***	0.014**	0.019***
	(2.65)	(3.25)	(2.71)	(3.16)			(2.76)	(4.10)	(2.52)	(4.52)
$CF_{jt} \times 2.ID_i$	0.019***	0.029***	0.019***	0.029***			0.017***	0.028***	0.019***	0.028***
	(3.67)	(4.69)	(3.47)	(4.65)			(3.66)	(4.17)	(4.25)	(4.70)
$CF_{jt} \times c.ID_i$					0.329***	0.074***				
					(4.12)	(4.03)				
					[1.015]	[1.269]				
Observations	6244	6244	6244	6244	6244	6244	6171	6171	6125	6125
Nb. Countries	69	69	69	69	69	69	69	69	68	68
Within Adj. R^2	.054	.057	.054	.057	.055	.057	.014	.017	.048	.051
$\delta_{i,t} + \delta_{j,t}$ FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Initial Conditions	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Continued on next page

Table 6. (*continued*) Robustness Checks, Debt Inflows to the Private Sector in Emerging Countries

Country Sample	Emerging Countries									
Capital Flows type	Private Debt Inflows									
Robustness	LAD regressions		Winsorize dep. variable at 5%-95%		Including Influential obs.		No winsorization		Excluding obs. with T=1	
	HI	RS	HI	RS	HI	RS	HI	RS	HI	RS
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
$CF_{jt} \times 1.ID_i$	0.009**	0.009**	0.009**	0.016***	0.016**	0.020***	0.016**	0.021***	0.013**	0.019***
	(2.23)	(2.51)	(2.13)	(4.77)	(2.48)	(4.02)	(2.53)	(4.51)	(2.37)	(4.40)
$CF_{jt} \times 2.ID_i$	0.015***	0.020***	0.014***	0.020***	0.017***	0.030***	0.019***	0.035***	0.019***	0.028***
	(3.83)	(4.50)	(3.75)	(4.39)	(2.98)	(3.99)	(3.44)	(4.57)	(4.03)	(4.48)
Observations	6244	6244	6302	6302	6313	6313	6271	6271	6095	6095
Nb. Countries	69	69	69	69	69	69	69	69	61	61
Within Adj. R^2	.	.	.049	.051	.077	.079	.052	.055	.056	.059
$\delta_{i,t} + \delta_{j,t}$ FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Initial Conditions	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table reports the results of estimating $\Delta \ln(y_{i,j,t}) = \alpha + \beta(CF_{j,t} \times ID_i) + \gamma \ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. $\Delta \ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. $\ln(y_{i,j,initial\,t})$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $CF_{j,t}$ is the arithmetic average private capital inflows-to-GDP-ratio for that country in period t. $x.ID_i$ is a proxy for the institutional dependence for each industry i in tercile-based form. $CF_{j,t}$ variables are standardized so that the coefficients of the interaction terms $(2.ID)$ measure the differential effects of a one standard deviation increase in capital inflows on the relative growth rate of the most institutionally-dependent sectors compared to the least ones. All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

Table 7. Controlling for Other Industry Characteristics, Private Debt Inflows, Emerging Countries Subsample

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

Country Sample / *Capital Flows type*	**Emerging Countries** **Private Debt Inflows**					
	EFD (1)	**LIQ** (2)	**FIX** (3)	**PCI** (4)	**HCI** (5)	**RDI** (6)
***ID proxy (form)*: HI (3 cat.)**						
$CF_{jt} \times 1.ID_i$	0.010* (1.95)	0.015*** (2.70)	0.012** (2.21)	0.012** (2.23)	0.018*** (2.90)	0.010 (1.55)
$CF_{jt} \times 2.ID_i$	0.018*** (3.47)	0.017*** (3.04)	0.015*** (3.22)	0.017*** (3.57)	0.022*** (4.11)	0.015*** (2.67)
$CF_{jt} \times 1.Other_i$	0.000 (0.10)	0.006 (0.97)	-0.002 (-0.38)	-0.010** (-2.00)	-0.006 (-1.38)	0.003 (0.49)
$CF_{jt} \times 2.Other_i$	0.012** (2.12)	0.009 (1.62)	-0.012** (-2.19)	-0.017*** (-3.04)	-0.008 (-1.08)	0.009 (1.20)
Within Adj. R^2	.055	.055	.055	.056	.054	.054
	(7)	(8)	(9)	(10)	(11)	(12)
***ID proxy (form)*: RS (3 cat.)**						
$CF_{jt} \times 1.ID_i$	0.022*** (4.77)	0.018*** (4.04)	0.018*** (4.00)	0.017*** (3.42)	0.019*** (4.29)	0.023*** (4.53)
$CF_{jt} \times 2.ID_i$	0.026*** (4.22)	0.029*** (4.51)	0.026*** (3.82)	0.026*** (3.87)	0.032*** (4.66)	0.030*** (4.00)
$CF_{jt} \times 1.Other_i$	0.003 (0.61)	0.007 (1.31)	-0.000 (-0.03)	-0.004 (-0.64)	-0.005 (-1.22)	-0.007 (-1.41)
$CF_{jt} \times 2.Other_i$	0.013** (2.31)	-0.000 (-0.03)	-0.003 (-0.60)	-0.005 (-0.74)	-0.009 (-1.26)	0.000 (0.02)
Within Adj. R^2	.058	.057	.057	.057	.057	.057
Observations	6244	6244	6244	6244	6244	6244
Nb. Countries	69	69	69	69	69	69
Industry-Time FE	yes	yes	yes	yes	yes	yes
Country-Time FE	yes	yes	yes	yes	yes	yes
Initial Conditions	yes	yes	yes	yes	yes	yes

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table reports the results of estimating $\Delta \ln(y_{i,j,t}) = \alpha + \beta(CF_{j,t} \times ID_i) + \kappa(CF_{j,t} \times Other_i) + \gamma \ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. $\Delta \ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. $\ln(y_{i,j,initial\,t})$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $CF_{j,t}$ is the arithmetic average private capital inflows-to-GDP-ratio for that country in period t. $x.ID_i$ is a proxy for the institutional dependence for each industry i in tercile-based form. In addition to our inetraction of interest, we include one-by-one interactions of capital flows with $Other_i$ industry characteristic in tercile-based form, including: the dependence of an industry on external finance (EFD), an industry's liquidity needs (LIQ), the asset-tangibility intensity (FIX), the physical capital intensity (PCI), the human capital intensity (HCI), and finally an industry's R&D intensity (RDI). $CF_{j,t}$ variables are standardized so that the coefficients of the interaction terms measure the differential effects of a one standard deviation increase in capital inflows on the relative growth rate of the most institutionally-dependent sectors ($2.ID$) or the most intensive sectors along another industry characteristic ($2.Other$) compared to the least ones. All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

Table 8. Addressing endogeneity (Reverse Causality)

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

Country Sample	Emerging Countries								
Capital Flows type	**Private Debt Inflows**								
	Growth Opp. U.S. Real Sales Growth			Growth Opp. WGO_{it}^{World}			Growth Opp. $WGO_{it}^{Emerging}$		
		HI	RS		HI	RS		HI	RS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\mathrm{CF_{jt}} \times 1.\mathrm{ID_i}$		0.012**	0.019***		0.012**	0.019***		0.012**	0.018***
		(2.11)	(4.31)		(2.26)	(4.44)		(2.16)	(4.25)
$\mathrm{CF_{jt}} \times 2.\mathrm{ID_i}$		0.016***	0.027***		0.017***	0.026***		0.017***	0.026***
		(3.35)	(4.46)		(3.70)	(4.43)		(3.65)	(4.24)
$\mathrm{CF_{jt}} \times 1.\mathrm{GO_{it}}$	0.013***	0.009*	0.011**	-0.004	-0.006	-0.007	-0.009*	-0.008	-0.008
	(2.89)	(1.83)	(2.52)	(-0.91)	(-1.27)	(-1.47)	(-1.75)	(-1.46)	(-1.47)
$\mathrm{CF_{jt}} \times 2.\mathrm{GO_{it}}$	0.014**	0.009	0.010*	0.015**	0.011*	0.009	0.007	0.005	0.003
	(2.38)	(1.52)	(1.85)	(2.51)	(1.88)	(1.55)	(1.32)	(1.01)	(0.56)
Observations	6244	6244	6244	6244	6244	6244	6244	6244	6244
Nb. Countries	69	69	69	69	69	69	69	69	69
Within Adj. R^2	.053	.055	.058	.054	.056	.059	.053	.055	.058
$\delta_{i,t} + \delta_{j,t}$ FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Initial Conditions	yes	yes	yes	yes	yes	yes	yes	yes	yes

	Excl. Top3 largest industries		Excl. Top3 fastest growing industries		Excl. Top3 fastest LP growing industries		$\hat{\lambda}_j\ CF_t^{\mathrm{World}}$	
	HI	RS	HI	RS	HI	RS	HI	RS
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
$\mathrm{CF_{jt}} \times 1.\mathrm{ID_i}$	0.015**	0.014***	0.014**	0.017***	0.008	0.020***	0.010	0.012**
	(2.40)	(3.10)	(2.39)	(3.92)	(1.48)	(4.39)	(1.64)	(2.42)
$\mathrm{CF_{jt}} \times 2.\mathrm{ID_i}$	0.015***	0.026***	0.017***	0.029***	0.019***	0.029***	0.015***	0.024***
	(2.90)	(3.83)	(3.20)	(4.19)	(3.68)	(4.37)	(2.88)	(3.99)
Observations	5250	5250	5323	5323	5368	5368	6244	6244
Nb. Countries	69	69	69	69	69	69	69	69
Within Adj. R^2	.052	.054	.056	.059	.055	.058	.053	.055
$\delta_{i,t} + \delta_{j,t}$ FE	yes	yes	yes	yes	yes	yes	yes	yes
Initial Conditions	yes	yes	yes	yes	yes	yes	yes	yes

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table reports the results of estimating $\Delta\ln(y_{i,j,t}) = \alpha + [\beta(CF_{j,t} \times ID_i)] + [\kappa(CF_{j,t} \times GO_{it})] + \gamma\ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. $\Delta\ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. $\ln(y_{i,j,initial\,t})$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $CF_{j,t}$ is the arithmetic average private capital inflows-to-GDP-ratio for that country in period t. $x.ID_i$ is a proxy for the institutional dependence for each industry i in tercile-based form. $x.GO_{it}$ is an implied proxy for the growth opportunities of industry i in period t in tercile-based form, and is measured as the initial U.S. industry real sales growth in colunms 1–3, as the initial world industry log PE ratio in colunms (4–6), or as the initial emerging markets industry log PE ratio in colunms (7–9). $CF_{j,t}$ variables are standardized so that the coefficients of the interaction terms $(2.ID)$ measure the differential effects of a one standard deviation increase in capital inflows on the relative growth rate of the most institutionally-dependent sectors or the sectors with better global growth opportunities compared to the least ones. Columns 16–17 replace $CF_{j,t}$ by $\hat{\lambda}_j\ CF_t^{\mathrm{World}}$, which are the fitted values obtained after regressing for each country j, $CF_{j,t}$ on CF_t^{World} and a constant and can be interpreted as the supply side component of $CF_{j,t}$. All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

Appendices

A. Sample Description

Table A.1. Country Sample

		Average number of: industries (out of 22)	Average number of: periods (out of 11)			Average number of: industries (out of 22)	Average number of: periods (out of 11)
Developed countries (D)		**19.2**	**6.9**	**Emerging countries (E)**		**17.4**	**5.1**
AUS	Australia	18.9	7.7	ALB	Albania	11	5
AUT	Austria	19	2.7	ARG	Argentina	20	5.5
CAN	Canada	20	9.1	AZE	Azerbaijan	19	3.5
CZE	Czechia	20.2	5.8		*least-dvp. (2006) emerging*		
	emerging (2009) developed			BGR	Bulgaria	20.8	5.7
DEU	Germany	20.3	6.5	BIH	Bosnia&Herzegovina	19	1
DNK	Denmark	19	8.6	BLR	Belarus	12	1.8
ESP	Spain	20.3	9.2	BLZ	Belize	10	1
EST	Estonia	19.3	3.7	BOL	Bolivia	18.2	5.4
	emerging (2009) developed			BRA	Brazil	19.8	7.2
FIN	Finland	20	9.1	CHL	Chile	15.9	7.2
FRA	France	19.9	9	CHN	China	19	6.9
GRC	Greece	19.9	7.2		*least-dvp. (2000) emerging*		
	emerging (1997) developed			COG	Congo	10	1
HRV	Croatia	19	2	COL	Colombia	19.3	8.8
HUN	Hungary	20	7.3	CRI	Costa Rica	15.7	7.5
	emerging (2009) developed			DZA	Algeria	17	1.9
ISL	Iceland	15.7	5.2	ECU	Ecuador	19.4	8.8
ISR	Israel	18.1	8.2	EGY	Egypt	18.4	6.1
ITA	Italy	20	9.1		*emerging (1991) least-dvp. (1997) emerging*		
JPN	Japan	21.3	5.8	FJI	Fiji	13.6	6.1
KOR	Republic of Korea	20.5	9.3	GAB	Gabon	10	1
	emerging (2003) developed			GEO	Georgia	18.4	4.6
KWT	Kuwait	16.7	8.8	GTM	Guatemala	18	1
NOR	Norway	19.4	8.8	IDN	Indonesia	19.4	8.8
NZL	New Zealand	17	3.6		*L (1994) E (2000) L (2006) E*		
OMN	Oman	17.9	6.3	IND	India	19.6	8.9
	emerging (2009) developed				*least-dvp. (2009) emerging*		
POL	Poland	20.9	7.6	IRN	Iran	19.8	3.6
	emerging (2012) developed			IRQ	Iraq	13.5	1.6
PRT	Portugal	19.6	8.9	JOR	Jordan	19.2	8.7
	emerging (1997) developed			KAZ	Kazakhstan	17.5	1.8
QAT	Qatar	17	1	LCA	Saint Lucia	12	1
SVK	Slovakia	19	6.3	LKA	Sri Lanka	18.1	6.6
	emerging (2009) developed				*least-dvp. (2000) emerging*		
SVN	Slovenia	18.9	6.3	LTU	Lithuania	21	4.8
	emerging (2000) developed			LVA	Latvia	19.1	6.7
SWE	Sweden	19.6	8.9	MAR	Morocco	18.4	6.7

Continued on next page

Table A.1. (*continued*) Country Sample

		Average number of: industries (out of 22)	Average number of: periods (out of 11)
Emerging countries (continued)			
MDA	Republic of Moldova	18.8	3.9
	least-dvp. (2006) emerging		
MEX	Mexico	20.2	9.2
MKD	North Macedonia	18	4.9
MNE	Montenegro	16	1
MNG	Mongolia	16.5	6
	emerging (1994) least-dvp. (2009) emerging		
MYS	Malaysia	19.2	7.9
NAM	Namibia	11	2
PER	Peru	19.3	8.8
PHL	Philippines	19.7	9
PSE	Palestine, State of	17.8	5.1
ROU	Romania	19.6	8
RUS	Russian Federation	19.9	6.6
SLV	El Salvador	16.7	2.8
SRB	Serbia	20	3
THA	Thailand	19.3	6.1
TTO	Trinidad & Tobago	15.9	5.6
TUN	Tunisia	13.6	4
TUR	Turkey	20.2	9.2
UKR	Ukraine	20	1
URY	Uruguay	18.8	7.7
VEN	Venezuela	18	4
VNM	Vietnam	19	1.8
	least-dvp. (2012) emerging		
YEM	Yemen	18.3	2.8
	least-dvp. (2012) emerging		
ZAF	South Africa	19.1	7

		Average number of: industries (out of 22)	Average number of: periods (out of 11)
Least-developed countries (L)		**14.8**	**3.6**
BDI	Burundi	11	1.8
BGD	Bangladesh	18.4	4.4
CMR	Cameroon	15.3	3.8
	emerging (1997) least-dvp.		
ETH	Ethiopia	16.5	8.7
GHA	Ghana	16	1
HND	Honduras	18	4
	emerging (1991) least-dvp.		
KEN	Kenya	16.4	8.6
KGZ	Kyrgyzstan	17.3	3.1
KHM	Cambodia	8	1
MDG	Madagascar	13	1.5
MMR	Myanmar	10.5	1.9
MWI	Malawi	11.9	6.7
NGA	Nigeria	13.5	1.8
NPL	Nepal	14.4	4
PAK	Pakistan	18	2
SEN	Senegal	16.9	5.4
	emerging (1997) least-dvp.		
TZA	Tanzania	15.6	5.4
UGA	Uganda	13	1
ZWE	Zimbabwe	18	2
All 103 countries		**17.4**	**5.3**

Note: The table reports our sample of 103 countries together with the average number of industries (out of 22) and of 3-year periods (out of 11, from 1985 to 2014) with non-missing industry growth, total capital flows and initial conditions. We report also the country's income classification from the World Bank (transition years in parenthesis): developed (D), emerging (E) and least-developed (L) countries. We exclude financial centers following the classification of Lane and Milesi-Ferretti (2018). The United States is also excluded from the sample because it is used for industry benchmarking.

Table A.2. Descriptive Statistics, 1985-2014

Variable	N	Mean	S.D.	Min	p25	p50	p75	Max	Skewness	Kurtosis
Real VA growth$_{i,j,t}$	11334	0.041	0.188	-0.471	-0.044	0.023	0.105	1.159	1.511	10.450
Log of Real VA$_{i,j,t}$	11334	20.078	2.439	5.741	18.480	20.293	21.830	26.563	-0.495	3.320
Industry VA Share$_{i,j,t}$	11259	0.054	0.071	0	0.015	0.033	0.065	0.906	3.817	24.196
Labor Productivity$_{i,j,t}$	11057	10.583	1.026	0.261	9.982	10.597	11.106	21.380	0.442	7.707
Labor Productivity Growth$_{i,j,t}$	9886	0.004	0.122	-3.195	-0.004	0.002	0.009	3.064	-2.976	202.166
Private Total Inflows$_{j,t}$	621	0.051	0.065	-0.116	0.015	0.036	0.073	0.540	2.856	18.550
Private Debt Inflows$_{j,t}$	617	0.019	0.040	-0.130	0.001	0.013	0.029	0.249	1.375	9.809
Private Equity Inflows$_{j,t}$	597	0.033	0.038	-0.038	0.010	0.024	0.042	0.371	3.976	29.797
Official Total Inflows$_{j,t}$	612	0.013	0.025	-0.170	0	0.009	0.025	0.106	-0.234	9.289
Net mix-off Official Flows$_{j,t}$ (AKV)	425	0	0.044	-0.196	-0.019	-0.001	0.019	0.169	0.128	6.068
Net off-off Flows $_{j,t}$ (AKV)	425	0.022	0.060	-0.111	-0.015	0.005	0.039	0.266	1.502	6.037
Net pri-off Flows$_{j,t}$ (AKV)	424	0.003	0.017	-0.074	-0.003	0.001	0.010	0.108	0.315	10.299
Composite Institutional Quality Index$_{j,t}$	574	0.594	0.189	0.109	0.478	0.565	0.717	1	0.121	2.701
Investment Profile Index$_{j,t}$	574	0.636	0.205	0.083	0.500	0.625	0.792	1	-0.003	2.377
Law and Order$_{j,t}$	574	0.659	0.235	0	0.500	0.667	0.833	1	-0.302	2.280
Corruption Index$_{j,t}$	574	0.542	0.223	0	0.333	0.500	0.667	1	0.460	2.617
Bureaucratic Quality Index$_{j,t}$	574	0.606	0.265	0	0.500	0.500	0.750	1	-0.218	2.521
Domestic Private Credit Growth$_{j,t}$	541	0.012	0.051	-0.311	-0.007	0.009	0.027	0.467	1.807	24.069
Oil and Gas Rents$_j$	104	0.054	0.108	0	0	0.004	0.046	0.446	2.324	7.363
U.S. Real Sales Growth$_{i,t}$	210	0.053	0.086	-0.250	0.004	0.053	0.091	0.558	0.992	9.193
Global PE Ratio$_{i,t}$	212	2.930	0.464	1.723	2.620	2.887	3.192	4.344	0.433	3.301
HI$_i$	22	-0.082	0.030	-0.157	-0.106	-0.077	-0.060	-0.039	-0.596	2.804
RS$_i$	22	0.895	0.177	0.356	0.893	0.966	0.983	0.999	-2.324	7.148
EFD$_i$	22	-0.096	1.164	-2.897	-0.385	-0.261	-0.140	3.868	1.348	8.545
LIQ$_i$	22	0.166	0.050	0.069	0.126	0.177	0.203	0.252	-0.294	2.205
RDI$_i$	22	0.971	1.335	0	0.266	0.422	0.926	5.456	2.151	7.037
FIX$_i$	22	0.280	0.126	0.116	0.204	0.258	0.363	0.617	0.986	3.642
PCI$_i$	22	1.204	0.520	0.440	0.911	1.117	1.466	2.496	0.889	3.413
HCI$_i$	22	0.381	0.103	0.259	0.313	0.358	0.429	0.686	1.374	4.727

B. Description of the Variables

B.1. Industry-country Measures

Value Added Growth $\Delta \ln(y_{i,j,t})$
Annual compounded growth rate in real value added of industry i in country j at time period t. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. Nominal VA in U.S. dollars is collected from the United Nations Industrial Development Organization (UNIDO) database, the INDSTAT2 2019 version. Following Giovanni and Levchenko (2009), nominal VA in current U.S dollars is converted into real VA in PPP-adjusted terms at 2011 constant prices using the Penn World Tables. We set yearly observations to missing when identified as erroneous entries, such as negative values of value added, zeroes observations if a positive value is recorded in employment and output variables, or whenever more than two sectors share an identical value-added growth rate for a given country-year. Moreover, we treat value-added observations with implausible jumps (consecutive large one-off increases and large one-off decreases or vice versa). Specifically, if an industry has a logarithmic difference of value added in two consecutive years superior to 100%, we consider it implausible if the ratio between the logarithmic difference of value added between the surrounding years and the suspicious log-growth rate is strictly less than 0.4. Likewise, the suspicious log-growth rate is considered implausible and value added observation in year t set to missing if the ratio between the log-difference in output and the log-difference in value added is less than 0.4. A similar strategy is adopted when the log-difference of value added in two consecutive years is inferior to -100%. Finally, we interpolate raw data only if the gap is less than 3 years, but the gain is marginal and does not affect our results. Following Rajan and Zingales (1998), the annual average real value-added growth is computed as the annual compounded growth rate in real value added for a period, i.e. defined as a 3-year average in our setting. We use the compounded growth rate rather than a simple arithmetic average as it better handles the missing data and maximizes data coverage. A given 3-year period must be based on annual value-added data separated by at least 2 years.
Source: UNIDO INDSTAT2 2019 version, own computations.

Initial Conditions $InitialCond._{ijt}$
Following Ciccone and Papaioannou (2009), we resort on the initial logarithm of value added of each industry-country observation to control for industry initial conditions. Alternatively, we show robustness to controlling for the initial share of an industry's value added in total country-level manufacturing value added, as originally done in Rajan and Zingales (1998). We select the first option due to the unbalanced nature of our sample with respect to the number of industries reporting data on value added varying significantly across countries (employing share of value added tends to give greater weights to industries in countries reporting less industries relative to shares in countries providing data for all manufacturing industries).
Source: UNIDO INDSTAT2 2019 version, own computations.

Real Labor Productivity Growth
Following Rodrik (2013), we compute from UNIDO dataset an industry's real labor productivity as the ratio of real value added in PPP-adjusted terms at 2011 constant prices divided by its total employment. To identify the industries with the fastest growth in labor productivity for each period t, we rank industries based on the previous period $t-1$ annual compounded growth rate in real labor productivity.
Source: UNIDO INDSTAT2 2019 version, own computations.

B.2. Industry Measures: Institutional Dependence Proxies

Herfindahl index (HI_i)
Constructed following Levchenko (2007). Equal to the Herfindahl index of intermediate input use, based on the 1997 US Input-Output (IO) Standard Use Table at the detailed level from the Bureau of Economic Analysis (BEA).
The first step [**1**] involves output sectors in the I-O matrix and entails matching the US I-O industry classification to the 4-digit ISIC Rev. 3.1 industries. We first map the 1997 I-O 6-digit classification to the 1997 NAICS 6-digit classification using the correspondence table (NAICS-IO.xls) provided by the BEA with the I-O table. The 1997 NAICS 6-digit level categories are then mapped cleanly into the 2002 NAICS 6-digit classification based on the correspondence table provided by the U.S. Census Bureau. We finally link the 2002 NAICS 6-digit industries to the ISIC Rev 3.1 4-digit categories using as a baseline the correspondence table provided by the U.S. Census Bureau. While in various cases the correspondences were one-to-one and a NAICS code could unambiguously be assigned to a specific ISIC code, for a large proportion of codes such correspondences were only partial and frequently end up assigning the same NAICS codes to various ISIC industries. Accordingly, we meticulously construct a manual correspondence table between the 2002 NAICS 6-digit codes and the 4-digit ISIC Rev.3.1 codes, in which a NAICS code is used only once, but in which an ISIC sector can have several NAICS codes, i.e. a many-to-one mapping. The detailed correspondence table is available upon request. Following this concordance step, we ensure that we have a unique triplet linking an ISIC output industry, an I-O output industry, and an I-O input industry.
With the output dimension converted to the ISIC 4-digit level, the second step [**2**] involves the input dimension. First, we convert the data to unique pairs linking ISIC output industry and I-O input industry by summing the purchases across I-O output codes (since one ISIC output category can be composed of several I-O output categories). Second, following Cowan and Neut (2007), we consider all intermediate goods, i.e. not only those restricted to manufacturing sectors, but all 478 I-O input sectors contained in the I-O matrix, after excluding 8 special industries (V00100, V00200, V00300, S00300, S00401, S00402, S00600, S00700).
As the third step [**3**], we compute the Herfindhal index of input use (times -1) for each output manufacturing industries at the 4-digit ISIC level. To do so, we first compute the shares of the purchases of each I-O input k in total input purchases of ISIC industry i (ϕ_{ik}) as the value of I-O input k used in the production of final output of ISIC industry i divided by the total value of all intermediate inputs for the production of final output of industry i. We then take the square of this quantity and compute for each ISIC output industry i the sum of the squared shares ϕ_{ik}^2 over the k inputs. The Herfindahl index is then multiplied by -1. In other words, the (inverse) Herfindahl index of concentration of purchases for each sector i is calculated as the sum of the squares of the shares ϕ of the purchases of each input k in total input purchases of i: $HI_i = -1 \times (\sum_k \phi_{ik})^2$.
Finally, the fourth step [**4**] involves the aggregation of the 4-digit ISIC level HI_i to the 2-digit ISIC level classification. The value of the HI_i index for each ISIC 2-digit industry is calculated as the median across its constituent ISIC 4-digit categories, in line with the procedure applied in Chor (2010). Note that an alternative method consist of taking the weighted average of the entering 4-digit ISIC sectors, using as weights the total input purchases of each 4-digit sectors. The higher the HI_i index (i.e., closer to 0), the more "complex" an industry is with a greater variety of its intermediate input purchases, and the higher its institutional dependence. Table B.3 reports the values and ordering of the HI_i index aggregated at the ISIC 3.1 2-digit level, for the baseline case and for alternative definitions.
Source: BEA, own computations.

Relationship Specificity measure (RS_i)
The industry-level time-invariant relationship-specificity measure is computed from the 1997 U.S. I-O Table, following the methodology of Nunn (2007).
The first step [**1**] consists of matching the I-O input industries with the Rauch (1999)'s original classification. Rauch groups goods into 1,189 industries classified according to the 4-digit SITC Rev. 2 system. We retrieve the 2007 revised dataset version. Each SITC industry is coded as being

in one of the following three categories: those sold on organized exchanges $[w]$, those not traded on organized exchanges but with reference prices $[r]$, and all other differentiated commodities that fall in neither of the aforementioned categories $[n]$. Two classification types are provided, one conservative and one liberal. We use the liberal one as in Nunn (2007). We map the 4-digit SITC industries to the BEA's 1997 I-O classification, using the 4-digit SITC to the 10-digit Harmonized System (HS10) concordance based on US Feenstra, Romalis and Schott (2002)'s import data (retrieved from the 1997 import data on the Center for International Data website) and the correspondence table from HS10 to the 1997 I-O 6-digit codes from the U.S. BEA. Note that an I-O industry could be mapped to multiple SITC codes, each with a specific Rauch classification. We use value-weight when aggregating the SITC industries to the I-O 1997 classification, using as weight the total trade value an SITC industry captures (the total trade data for each SITC industry is retrieved from the 2002 U.S. trade flows disaggregated data, imports plus exports, assembled by Feenstra, Romalis and Schott (2002)). An alternative strategy is to use equal weight. As a result, the original Rauch SITC-based data are mapped into 298 I-O input industries (note that the Herfindhal index before aggregation is based on 478 I-O input sectors). This step complements the information from the U.S. 1997 I-O Use Table on input use with data on the fraction of each IO input in one of the three Rauch's classes.
The second step [**2**] consists of mapping the I-O output sectors to the 4-digit ISIC Rev. 3.1 industries. The third step [**3**] requires computing the shares of the purchases of each I-O input k in total input purchases of ISIC industry i (ϕ_{ik}). These two steps apply the same procedures described above for the Herfindhal index in steps 1, 2 and 3.
The fourth step [**4**] consists of constructing for each 4-digit ISIC output industries two measures of the proportion of its intermediate inputs that are relationship-specific. The first measure, classify inputs that are neither bought and sold on an exchange nor reference-priced as being relationship-specific, and computed as $Z_i^1 = \sum_k \theta_{ik} R_j^{\text{neither}}$. The second measure, adopted in this paper and akin to the baseline in Nunn (2007) and Chor (2010), includes in addition to the "neither" input category the reference-priced inputs as being relationship-specific, i.e. $Z_i^2 = \sum_k \theta_{ik}(R_j^{\text{neither}} + R_j^{\text{ref price}})$.
Finally, the fifth step [**5**] involves the aggregation of the 4-digit ISIC level Relationship Specificity index to the 2-digit ISIC level classification. The value of the Relationship Specificity index for each ISIC 2-digit industry (RS_i) is calculated as the median value of Z_i^2 across its constituent ISIC 4-digit categories, in line with the procedure applied in Chor (2010). Note that an alternative method consist of taking the weighted average of the entering 4-digit ISIC sectors, using as weights the total input purchases of each 4-digit sectors. An RS_i index further from 0 implies an industry has a greater fraction of its inputs that are defined as relationship-specific, and the higher its institutional dependence. Table B.4 reports the values and ordering of the RS_i index aggregated at the ISIC 3.1 2-digit level, for the baseline case and for alternative definitions.
Source: BEA, Rauch (1999), own computations.

Table B.1. Industry Ranking for the Two Institutional Dependence Proxies

ISIC 3.1 2-digit	Industry Code Description	**HI (rank)**	**RS (rank)**
29	Machinery and equipment n.e.c.	-0.039 (1)	0.990 (4)
36	Furniture; manufacturing n.e.c.	-0.041 (2)	0.970 (9)
34	Motor vehicles, trailers, semi-trailers	-0.049 (3)	0.983 (7)
33	Medical, precision and optical instruments	-0.050 (4)	0.995 (3)
28	Fabricated metal products	-0.056 (5)	0.965 (13)
26	Non-metallic mineral products	-0.060 (6)	0.979 (8)
35	Other transport equipment	-0.067 (7)	0.984 (5)
31	Electrical machinery and apparatus	-0.068 (8)	0.969 (10)
27	Basic metals	-0.068 (9)	0.783 (19)
24	Chemicals and chemical products	-0.069 (10)	0.933 (16)
25	Rubber and plastics products	-0.073 (11)	0.958 (14)
22	Printing and publishing	-0.081 (12)	0.996 (2)
30	Office, accounting and computing machinery	-0.086 (13)	0.999 (1)
32	Radio,television and communication equipment	-0.088 (14)	0.983 (6)
18	Wearing apparel, fur	-0.090 (15)	0.966 (12)
19	Leather, leather products and footwear	-0.098 (16)	0.967 (11)
21	Paper and paper products	-0.106 (17)	0.950 (15)
15	Food and beverages	-0.111 (18)	0.770 (20)
16	Tobacco products	-0.118 (19)	0.415 (21)
20	Wood products (excl. furniture)	-0.119 (20)	0.892 (18)
17	Textiles	-0.121 (21)	0.893 (17)
23	Coke,refined petroleum products,nuclear fuel	-0.157 (22)	0.356 (22)
	Industry Average	-0.082	0.895
	Industry Standard Deviation	0.030	0.177
	Industry 66th percentile	-0.068	0.979
	Industry 33th percentile	-0.090	0.950

Note: The table reports for each 2-digit ISIC 3.1 manufacturing industry the industry-level values and ranks for Levchenko's Herfindhal index (*HI*) and Nunn's Relationship Specificity measure (*RS*). Both institutional dependence proxies are derived from the U.S. 1997 I-O Use Table (see Appendix B.2 for details).

Table B.2. Preliminary Validation of the Institution Dependence Proxies

Dependent variable is the annual compounded growth rate in real value added of industry i in country j at time period t.

Country Sample	All Countries							
ID proxy form	**Panel A: continuous form**				**Panel B: tercile-based**			
ID proxy	**HI**		**RS**		**HI**		**RS**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Initial Cond.$_{ijt}$	-0.035*** (-14.67)	-0.035*** (-14.68)	-0.034*** (-14.38)	-0.034*** (-14.40)	-0.035*** (-14.81)	-0.036*** (-14.84)	-0.035*** (-14.66)	-0.035*** (-14.66)
$\mathrm{INST_{jt}}^{\mathrm{Composite}} \times \mathrm{c.ID_i}$	0.255*** (4.93) [0.760]	0.138* (1.82) [0.412]	0.029*** (2.90) [0.472]	0.010 (0.62) [0.159]				
$\mathrm{lnGDPpc_{jt}} \times \mathrm{c.ID_i}$		0.171* (1.87) [0.499]		0.028 (1.61) [0.446]				
$\mathrm{INST_{jt}}^{\mathrm{Composite}} \times \mathrm{1.ID_i}$					0.011*** (3.05)	0.002 (0.34)	0.000 (0.10)	0.006 (1.22)
$\mathrm{INST_{jt}}^{\mathrm{Composite}} \times \mathrm{2.ID_i}$					0.021*** (5.57)	0.014*** (2.65)	0.016*** (3.83)	0.011* (1.93)
$\mathrm{lnGDPpc_{jt}} \times \mathrm{1.ID_i}$						0.013** (2.15)		-0.007 (-1.31)
$\mathrm{lnGDPpc_{jt}} \times \mathrm{2.ID_i}$						0.010 (1.64)		0.007 (0.99)
Observations	10623	10623	10623	10623	10623	10623	10623	10623
Nb. Countries	92	92	92	92	92	92	92	92
R^2	.414	.415	.413	.414	.415	.415	.414	.414
Within Adj. R^2	.053	.053	.051	.052	.053	.054	.052	.053
Industry-Time FE	yes	yes	yes	yes	yes	yes	yes	yes
Country-Time FE	yes	yes	yes	yes	yes	yes	yes	yes
#i per j,t (p1;p10;p50)	10;16;18.8							
#j per decade	52;65;77;66							
Dep. var. (avg; p50)	0.039; 0.022							

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table tests the validity of the two institution-dependence proxies across all countries in our sample for both Levchenko's Herfindhal index (*HI*) and Nunn's Relationship Specificity measure (*RS*), reported in continuous form in Panel A and in the form of a tercile-based categorical variable in Panel B. The table reports the results of estimating $\Delta\ln(y_{i,j,t}) = \alpha + \omega(INST_{j,t} \times ID_i) + \gamma\ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. $\Delta\ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. $\ln(y_{i,j,initial\,t})$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $x.ID_i$ is a proxy for the institutional dependence for each industry i in continuous form in Panel A and in tercile-based form in Panel B. $INST_{\mathrm{j,t}}$ is the arithmetic average of our composite institutional quality measure for country j in period t. $INST_{\mathrm{j,t}}$ is standardized so that the coefficients of the interaction terms $(2.ID)$ measure the differential effects of a one standard deviation increase in the j,t variable on the relative growth rate of the most institutionally-dependent sectors compared to the least ones. $lnGDPpc_{\mathrm{j,t}}$ is the logarithm of initial level of output-side real GDP per capita of country j of the respective period t. All regressions are estimated using OLS and include industry-period and country-period fixed effects. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

Table B.3. Robustness: Industry Ranking for alternative HI proxies

ISIC 3.1 2-digit	Industry Code Description	HI proxies (rank)				
		Baseline	HI^a	HI^b	HI^c	HI^d
29	Machinery and equipment n.e.c.	-0.039 (1)	-0.055 (1)	-0.061 (1)	-0.042 (1)	-0.039 (1)
36	Furniture; manufacturing n.e.c.	-0.041 (2)	-0.062 (2)	-0.070 (2)	-0.043 (2)	-0.042 (3)
34	Motor vehicles, trailers, semi-trailers	-0.049 (3)	-0.068 (3)	-0.082 (3)	-0.193 (21)	-0.053 (5)
33	Medical, precision and optical instruments	-0.050 (4)	-0.075 (4)	-0.096 (4)	-0.047 (3)	-0.044 (4)
28	Fabricated metal products	-0.056 (5)	-0.080 (5)	-0.102 (5)	-0.069 (7)	-0.041 (2)
26	Non-metallic mineral products	-0.060 (6)	-0.092 (7)	-0.146 (9)	-0.064 (6)	-0.055 (6)
35	Other transport equipment	-0.067 (7)	-0.095 (9)	-0.121 (6)	-0.058 (5)	-0.065 (10)
31	Electrical machinery and apparatus	-0.068 (8)	-0.102 (11)	-0.130 (7)	-0.054 (4)	-0.056 (7)
27	Basic metals	-0.068 (9)	-0.089 (6)	-0.138 (8)	-0.083 (8)	-0.067 (11)
24	Chemicals and chemical products	-0.069 (10)	-0.098 (10)	-0.234 (17)	-0.086 (11)	-0.085 (15)
25	Rubber and plastics products	-0.073 (11)	-0.094 (8)	-0.147 (11)	-0.099 (14)	-0.062 (9)
22	Printing and publishing	-0.081 (12)	-0.167 (20)	-0.295 (20)	-0.083 (9)	-0.062 (8)
30	Office, accounting and computing machinery	-0.086 (13)	-0.132 (13)	-0.147 (10)	-0.086 (10)	-0.083 (14)
32	Radio,television and communication equipment	-0.088 (14)	-0.144 (14)	-0.189 (14)	-0.089 (12)	-0.079 (13)
18	Wearing apparel, fur	-0.090 (15)	-0.131 (12)	-0.170 (12)	-0.089 (13)	-0.069 (12)
19	Leather, leather products and footwear	-0.098 (16)	-0.155 (16)	-0.207 (15)	-0.150 (19)	-0.088 (17)
21	Paper and paper products	-0.106 (17)	-0.146 (15)	-0.218 (16)	-0.153 (20)	-0.086 (16)
15	Food and beverages	-0.111 (18)	-0.161 (19)	-0.189 (13)	-0.119 (17)	-0.095 (18)
16	Tobacco products	-0.118 (19)	-0.196 (21)	-0.363 (21)	-0.118 (16)	-0.108 (20)
20	Wood products (excl. furniture)	-0.119 (20)	-0.159 (17)	-0.261 (18)	-0.143 (18)	-0.103 (19)
17	Textiles	-0.121 (21)	-0.160 (18)	-0.278 (19)	-0.113 (15)	-0.112 (21)
23	Coke,refined petroleum products,nuclear fuel	-0.157 (22)	-0.272 (22)	-0.449 (22)	-0.376 (22)	-0.259 (22)
	Industry Average	-0.082	-0.124	-0.186	-0.107	-0.080
	Industry Standard Deviation	0.030	0.052	0.098	0.072	0.046
	Industry 66$^{\text{th}}$ percentile	-0.068	-0.094	-0.138	-0.083	-0.062
	Industry 33$^{\text{th}}$ percentile	-0.090	-0.146	-0.207	-0.113	-0.085
	Industry Skewness	-0.596	-0.972	-1.036	-2.491	-2.842
	Industry Rank Correlation	1	0.925	0.897	0.744	0.950

Note: The table reports the values and ranking of the Herfindahl index of intermediate input use (HI_i), for the baseline case (defined in Appendix B.2) and for alternative definitions. Constructed following Levchenko (2007). Precisely, HI^a consider all intermediate goods except from services sectors, while HI^b consider only those restricted to manufacturing sectors (see step 2). HI^c takes the weighted average of the entering 4-digit ISIC sectors, using as weights the total input purchases of each 4-digit sectors, when aggregating the measure at the ISIC 2-digit level (see step 4). HI^d is computed from the 2002 U.S. I-O Table.

Table B.4. Robustness: Industry Ranking for alternative RS proxies

ISIC 3.1 2-digit	Industry Code Description	RS proxies (rank)							
		Baseline	RS^a	RS^b	RS^c	RS^d	RS^e	RS^f	RS^g
30	Office, accounting and computing machinery	0.999 (1)	0.767 (4)	0.999 (1)	0.999 (1)	0.999 (1)	0.998 (1)	0.998 (1)	0.995 (3)
22	Printing and publishing	0.996 (2)	0.817 (1)	0.996 (2)	0.998 (2)	0.996 (2)	0.995 (2)	0.995 (2)	0.996 (2)
33	Medical, precision and optical instruments	0.995 (3)	0.727 (7)	0.995 (3)	0.994 (3)	0.983 (7)	0.994 (3)	0.994 (3)	0.985 (5)
29	Machinery and equipment n.e.c.	0.990 (4)	0.726 (8)	0.992 (6)	0.991 (4)	0.986 (5)	0.989 (4)	0.989 (4)	0.987 (4)
35	Other transport equipment	0.984 (5)	0.769 (3)	0.991 (7)	0.981 (8)	0.987 (4)	0.982 (5)	0.982 (7)	0.983 (6)
32	Radio,television and communication equipment	0.983 (6)	0.666 (10)	0.984 (11)	0.983 (5)	0.985 (6)	0.981 (6)	0.982 (8)	0.996 (1)
34	Motor vehicles, trailers, semi-trailers	0.983 (7)	0.762 (5)	0.988 (9)	0.983 (6)	0.992 (3)	0.981 (7)	0.986 (6)	0.973 (7)
26	Non-metallic mineral products	0.979 (8)	0.357 (16)	0.992 (5)	0.982 (7)	0.925 (12)	0.977 (8)	0.979 (9)	0.965 (9)
36	Furniture; manufacturing n.e.c.	0.970 (9)	0.550 (12)	0.987 (10)	0.959 (13)	0.875 (14)	0.966 (9)	0.967 (10)	0.966 (8)
31	Electrical machinery and apparatus	0.969 (10)	0.587 (11)	0.972 (12)	0.975 (10)	0.974 (9)	0.963 (12)	0.962 (13)	0.931 (15)
19	Leather, leather products and footwear	0.967 (11)	0.781 (2)	0.971 (14)	0.965 (12)	0.842 (16)	0.965 (10)	0.964 (11)	0.942 (13)
18	Wearing apparel, fur	0.966 (12)	0.703 (9)	0.966 (15)	0.929 (16)	0.965 (10)	0.963 (11)	0.963 (12)	0.959 (12)
28	Fabricated metal products	0.965 (13)	0.473 (13)	0.971 (13)	0.971 (11)	0.962 (11)	0.959 (13)	0.957 (14)	0.962 (11)
25	Rubber and plastics products	0.958 (14)	0.431 (15)	0.961 (16)	0.958 (14)	0.976 (8)	0.953 (14)	0.986 (5)	0.964 (10)
21	Paper and paper products	0.950 (15)	0.331 (17)	0.993 (4)	0.980 (9)	0.844 (15)	0.946 (15)	0.946 (16)	0.888 (17)
24	Chemicals and chemical products	0.933 (16)	0.330 (18)	0.942 (17)	0.952 (15)	0.892 (13)	0.924 (16)	0.924 (17)	0.934 (14)
17	Textiles	0.893 (17)	0.460 (14)	0.902 (18)	0.860 (18)	0.842 (17)	0.883 (17)	0.893 (18)	0.923 (16)
20	Wood products (excl. furniture)	0.892 (18)	0.750 (6)	0.990 (8)	0.894 (17)	0.687 (18)	0.881 (18)	0.947 (15)	0.821 (18)
27	Basic metals	0.783 (19)	0.326 (19)	0.817 (19)	0.802 (20)	0.680 (19)	0.752 (19)	0.747 (20)	0.760 (19)
15	Food and beverages	0.770 (20)	0.266 (20)	0.781 (20)	0.816 (19)	0.590 (20)	0.742 (20)	0.792 (19)	0.737 (20)
16	Tobacco products	0.415 (21)	0.233 (21)	0.415 (21)	0.587 (22)	0.415 (21)	0.307 (21)	0.421 (21)	0.626 (21)
23	Coke,refined petroleum products,nuclear fuel	0.356 (22)	0.195 (22)	0.356 (22)	0.790 (21)	0.259 (22)	0.244 (22)	0.419 (22)	0.322 (22)
	Industry Average	0.895	0.546	0.907	0.925	0.848	0.879	0.900	0.892
	Industry Standard Deviation	0.177	0.210	0.178	0.100	0.203	0.208	0.168	0.160
	Industry 66^{th} percentile	0.979	0.726	0.990	0.981	0.976	0.977	0.982	0.966
	Industry 33^{th} percentile	0.950	0.431	0.966	0.952	0.844	0.946	0.947	0.931
	Industry Skewness	-2.324	-0.235	-2.419	-2.040	-1.659	-2.362	-2.252	-2.384
	Industry Rank Correlation	1	0.779	0.833	0.948	0.913	0.997	0.935	0.947

Note: The table reports the values and ranking of the Relationship Specificity measure (RS_i), for the baseline case (defined in Appendix B.2) and for alternative definitions. Constructed following Nunn (2007). Precisely, RS^a applies the Z_i^1 definition for the intermediate inputs that are relationship-specific, which treats only the ‘‘neither’’ input category as being relationship-specific (see step 4). RS^b uses the conservative Rauch's classification, instead of the liberal one (see step 1). RS^c applies equal weight when mapping the 4-digit SITC industries in Rauch data to the BEA's 1997 I-O classification (see step 1). RS^d takes the weighted average of the entering 4-digit ISIC sectors, using as weights the total input purchases of each 4-digit sectors, when aggregating the measure at the ISIC 2-digit level (see step 5). RS^e consider all intermediate goods except from services sectors, while RS^f consider only those restricted to manufacturing sectors (see step 3). RS^g is computed from the 2002 U.S. I-O Table.

Table B.5. Alternative Definitions of ID Proxies, Debt Inflows to the Private Sector in Emerging Countries

Country Sample / *Capital Flows type*	**Emerging Countries** **Private Debt Inflows**	
ID form	**ID 3 categories** ($CF_{jt} \times 2.ID_i$)	**ID cont.** ($CF_{jt} \times c.ID_i$)
HI Baseline	0.019*** (4.13)	0.329*** (4.12) [1.015]
HI^b	0.020*** (4.27)	0.201*** (3.78) [1.034]
HI^c	0.025*** (4.93)	0.131*** (4.72) [1.280]
HI^d	0.017*** (3.48)	0.117** (2.52) [0.824]
HI^e	0.026*** (5.58)	0.254*** (3.28) [1.138]
RS Baseline	0.029*** (4.61)	0.074*** (4.03) [1.269]
RS^b	0.024*** (4.05)	0.057*** (4.78) [1.175]
RS^c	0.020*** (3.82)	0.071*** (3.92) [1.234]
RS^d	0.026*** (4.52)	0.116*** (4.81) [1.137]
RS^f	0.029*** (4.61)	0.063*** (4.00) [1.261]
RS^g	0.028*** (4.91)	0.078*** (4.18) [1.264]
RS^h	0.023*** (3.75)	0.079*** (3.66) [1.224]
Observations	6244	6244
Countries	69	69
$\delta_{i,t} + \delta_{j,t}$ FE	yes	yes
Initial Conditions	yes	yes

Note: Data are three-year averages or initial-period observations from 1985 to 2014. This table reports the results of estimating $\Delta\ln(y_{i,j,t}) = \alpha + \beta(CF_{j,t} \times ID_i) + \gamma\ln(y_{i,j,initial\,t}) + \theta_{j,t} + \theta_{i,t} + \epsilon_{i,j,t}$. $\Delta\ln(y_{i,j,t})$ is the annual compounded growth rate of real value added of industry i in country j at time period t. *Initial* $share_{ijt}$ is the initial logarithm of real value added in PPP-adjusted terms of industry i in country j of the respective period. $CF_{j,t}$ is the arithmetic average private capital inflows-to-GDP-ratio for that country in period t. ID_i is a proxy for the institutional dependence for each industry i. This table tests the sensitivity of the results on private debt inflows to emerging countries for alternative definitions of the HI and RS proxies, as defined in Table B.3 and Table B.4, respectively. $CF_{j,t}$ variables are standardized so that the coefficients of the interaction terms $(2.ID)$ measure the differential effects of a one standard deviation increase in capital inflows on the relative growth rate of the most institutionally-dependent sectors compared to the least ones. All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. The t-statistics reported in parentheses are based on robust standard errors clustered by industry-country. For space considerations, we report only the estimated coefficients on $CF_{jt} \times 2.ID_i$ or $CF_{jt} \times c.ID_i$. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

B.3. Other Industry Measures

External Financial Dependence (EFD_i)
Following Rajan and Zingales (1998) procedure, we use U.S. firm-level data between 1980 and 1999 from Compustat to construct a time-invariant industry-specific EFD measure based on the share of capital expenditures not financed with cash flow from operations. First, to smooth any temporal fluctuations, we sum both capital expenditures and cash flows from operations over the 1980–1999 period for each firm (we obtain similar results when aggregated over the 1980s). We add the restriction that the firm-level EFD ratios are set to missing if based on less than 3 years. Then, using the sums obtained in the first step, we compute firm-level EFD measures by taking the ratio of capital expenditures minus cash flows from operations over capital expenditures (i.e., $\frac{capx - CashFlow}{capx}$). Compustat records a firm's industry using US NAICS 2002 6-digit codes, which has broad direct correspondence with the 4-digit ISIC Rev.3.1 classification used here. The manual correspondence table is available upon request. Finally, the industry-level EFD is the median ratio across firms for each 2-digit ISIC sector i, thereby obtaining a measure that is representative for the industry and not too heavily influenced by outliers. Note that the median number of firms for each industry is close to 150, and at the minimum contains 11 firms for the Tobacco products sector (ISIC16). Cash flows from operations (CashFlow) is defined as the sum of funds from operations (*fopt*), plus increases in account payables (*apalch*, or if unavailable by $ap_t - ap_{t-1}$ from the balance sheet account), decreases in total receivables (*recch*, or if unavailable by $rect_{t-1} - rect_t$ from the balance sheet account), and decreases in total inventories (*invch*, or if unavailable by $invt_{t-1} - invt_t$ from the balance sheet account). Intuitively, an increase in outstanding payables from one period to the next increases a firm's cash positions, while increasing inventories and receivables diminish a firm's liquidity. In Compustat, the definition of cash flows vary according to the format code a firm follows in reporting flow-of-funds data: prior to 15th July, 1988, the Statement of Cash Flows format code in Computat (*scf*) was coded as either 1,2 or 3; and afterwards with format code *scf*=7. The sum of funds from operations (*fopt*) is available for cash flow statement with format code [*scf*=1,2,3]. For cash flow statement with format code [*scf*=7], *fopt* is defined as the sum of the following variables: income before extraordinary items (*ibc*), depreciation and amortization (*dpc*), deferred taxes (*txdc*), equity in net loss/earnings (*esubc*), sale of property, plant and equipment, and investments-gain/loss (*sppiv*), and funds from operations-other (*fopo*).
Source: Compustat, own computations.

Liquidity Needs (LIQ_i), Asset Tangibility (FIX_i) and **R&D Intensity (RDI_i)**
LIQ_i, FIX_i and RDI_i measures are also constructed for the median publicly-listed company in the Compustat database. Following Kroszner, Laeven and Klingebiel (2007), we use the measure of an industry's liquidity needs introduced by Raddatz (2006). Using Compustat data, it is calculated as the ratio of a firm's total inventories (*invt*) to annual sales (*sale*) and captures the extent to which inventories cannot be financed by current revenue, such that higher values of LIQ_i indicate a greater reliance on external liquidity. As in Baker and Wurgler (2002), Braun (2005) and Braun and Larrain (2005), the asset tangibility ratio records the share of net property, plant and equipment (*ppent*) in total book-value of assets (*at*). Following Ilyina and Samaniego (2011), R&D intensity is defined as R&D expenditures (*xrd*) divided by capital expenditures (*capx*). For each measure, we take the average value of the firm-level yearly ratios over the 1980–1999 period, thereby smoothing any temporal fluctuations within a firm. We then link the US NAICS 2002 6-digit industry codes in Compustat to the 4-digit ISIC Rev.3.1 classification. Finally, the time invariant industry-level proxies are the median ratio across firms for each 2-digit ISIC sector i.
Source: Compustat, own computations.

Physical Capital Intensity (PCI_i), Skill intensity (HCI_i)
Data on factor intensities of production across industries are computed from NBER-CES Manufacturing Industry Database (Bartelsman and Gray, 1996). The original data is converted from NAICS 1997 to the NAICS 2002 using the BEA concordance and then mapped to 4-digit ISIC Rev.3.1 classification using the industry mapping described above (c.f. Compustat-based proxies). Industry physical capital intensity (PCI) is the total real capital stock (*cap*) over total value added (*vadd*) in each 2-digit ISIC sector i (Nunn, 2007; Ciccone and Papaioannou, 2009). Skill intensity (HCI) is measured as the ratio of non-production worker wages to total wages (i.e., $\frac{pay - prodw}{pay}$) (Nunn, 2007;

Ferguson and Formai, 2013). Both factor intensities are then averaged over the 1980–1999 period. Source: NBER-CES Manufacturing Industry Database, own computations

U.S. Real Sales Growth
Following Fisman and Love (2004) and Gupta and Yuan (2009), the annual and industry-specific U.S. real sales growth is constructed from Compustat data and computed as the industry median of real sales growth in each year for the 22 2-digit ISIC Rev.3.1 industries. Compustat records a firm's industry using US NAICS 2002 6-digit codes, which has broad direct correspondence with the 4-digit ISIC Rev.3.1 classification used here. The manual correspondence table is available upon request. We use the initial value of industry i of the respective period t. Results are robust to using the arithmetic average of yearly values in a given period. We deflate sales by the 4-digit SIC-based industry price of shipment available from the NBER-CES data, and if otherwise missing, we use the aggregate U.S. GDP Implicit Price Deflator from the U.S. Bureau of Economic Analysis.
Source: Compustat, own computations.

World Growth Opportunities, Global PE ratio WGO_{it}^{World}
Following Bekaert et al. (2007), we collect from Datastream monthly industry-level price-to-earnings (PE) ratios of the world market. We also collect global emerging markets industry PE. Datastream uses Industry Classification Benchmark (ICB) created by FTSE Group and Dow Jones Indexes to classify companies into 114 sub-sectors. Following the approach of Bekaert et al. (2007), we link ICB sub-sectors into 22 manufacturing 2-digit ISIC rev 3.1 industries. The manual correspondence table is available upon request. Whenever more than one ICB sectors are included in an ISIC group, we calculate the equally-weighted average of the PE ratios of the entering ICB sectors. Our results remain robust if we calculate instead the value-weighted average of the PE ratios using the ICB sectors' market values of December of the previous year. Finally, for every industry, we take the log of the global PE ratios and use the December value of each year (we obtain similar results if compute yearly values of the PE ratios by taking the arithmetic mean for all months in a given year). We use in the regressions the initial value of industry i of the respective period t. Results are robust to using the arithmetic average of yearly values in a given period.
Source: Datastream, own Computations.

Table B.6. Correlation Matrix Amongst Industry Characteristics

Industry Characteristics	HI	RS	EFD	LIQ	FIX	PCI	HCI	RDI
HI, Input Concentration, Levchenko (2007)	1							
RS, Input Relationship-Specifity, Nunn (2007)	0.62*	1						
EFD, External Financial Dependence	0.07	0.13	1					
LIQ, Liquidity Needs	0.24	0.32	0.03	1				
FIX, Asset Tangibility	-0.24	-0.53*	-0.15	-0.68*	1			
PCI, Physical Capital Intensity	-0.22	-0.62*	0.11	-0.63*	0.82*	1		
HCI, Human Capital Intensity	0.21	0.33	0.36	0.24	-0.37*	-0.21	1	
RDI, R&D intensity	0.47*	0.67*	0.36*	0.41	-0.61*	-0.41*	0.70*	1

Note: The table reports rank correlations between the main industry-level variables. See Appendices B.2 and B.3 for further details. * indicates significance at the 5 percent level.

Table B.7. Industry Ranking for the Other Industry Characteristics

ISIC 3.1 2-digit	Industry Code Description	**EFD (rank)**	**LIQ (rank)**	**FIX (rank)**	**PCI (rank)**	**HCI (rank)**	**RDI (rank)**
15	Food and beverages	-0.309 (14)	0.102 (20)	0.363 (5)	1.466 (6)	0.362 (11)	0.180 (18)
16	Tobacco products	-2.897 (22)	0.252 (1)	0.219 (14)	1.047 (13)	0.370 (10)	0.402 (12)
17	Textiles	-0.157 (7)	0.178 (10)	0.329 (7)	1.287 (8)	0.282 (20)	0.349 (15)
18	Wearing apparel, fur	-0.298 (13)	0.213 (5)	0.116 (22)	0.440 (22)	0.277 (21)	0.000 (22)
19	Leather, leather products and footwear	-0.735 (20)	0.219 (3)	0.128 (21)	0.630 (20)	0.315 (16)	0.554 (9)
20	Wood products (excl. furniture)	-0.250 (11)	0.114 (19)	0.293 (8)	1.126 (11)	0.284 (19)	0.164 (20)
21	Paper and paper products	-0.385 (17)	0.116 (18)	0.510 (2)	1.674 (4)	0.313 (17)	0.266 (17)
22	Printing and publishing	-0.752 (21)	0.069 (22)	0.267 (11)	0.911 (17)	0.353 (12)	0.602 (8)
23	Coke,refined petroleum products,nuclear fuel	-0.236 (9)	0.076 (21)	0.617 (1)	2.496 (1)	0.429 (6)	0.062 (21)
24	Chemicals and chemical products	3.868 (1)	0.141 (16)	0.206 (16)	1.768 (3)	0.473 (4)	5.456 (1)
25	Rubber and plastics products	-0.273 (12)	0.126 (17)	0.363 (6)	1.253 (9)	0.326 (14)	0.368 (13)
26	Non-metallic mineral products	-0.350 (16)	0.145 (14)	0.421 (3)	1.600 (5)	0.304 (18)	0.337 (16)
27	Basic metals	-0.210 (8)	0.168 (13)	0.397 (4)	2.272 (2)	0.322 (15)	0.168 (19)
28	Fabricated metal products	-0.566 (19)	0.178 (11)	0.278 (9)	1.137 (10)	0.351 (13)	0.351 (14)
29	Machinery and equipment n.e.c.	-0.431 (18)	0.203 (6)	0.216 (15)	0.995 (14)	0.431 (5)	0.926 (6)
30	Office, accounting and computing machinery	1.056 (3)	0.190 (9)	0.133 (20)	0.752 (19)	0.686 (1)	2.845 (3)
31	Electrical machinery and apparatus	-0.025 (5)	0.194 (7)	0.245 (13)	0.938 (15)	0.392 (8)	1.245 (5)
32	Radio,television and communication equipment	0.317 (4)	0.194 (8)	0.179 (18)	1.108 (12)	0.496 (3)	2.353 (4)
33	Medical, precision and optical instruments	1.241 (2)	0.235 (2)	0.155 (19)	0.549 (21)	0.563 (2)	3.168 (2)
34	Motor vehicles, trailers, semi-trailers	-0.140 (6)	0.142 (15)	0.270 (10)	1.365 (7)	0.259 (22)	0.441 (11)
35	Other transport equipment	-0.248 (10)	0.213 (4)	0.250 (12)	0.914 (16)	0.420 (7)	0.614 (7)
36	Furniture; manufacturing n.e.c.	-0.337 (15)	0.176 (12)	0.204 (17)	0.764 (18)	0.370 (9)	0.511 (10)
	Industry Average	-0.096	0.166	0.280	1.204	0.381	0.971
	Industry Standard Deviation	1.164	0.050	0.126	0.520	0.103	1.335
	Industry 66^{th} percentile	-0.210	0.194	0.293	1.287	0.392	0.602
	Industry 33^{th} percentile	-0.337	0.142	0.216	0.938	0.322	0.349

Note: The table reports the values and ordering for the other industry characteristics aggregated at the ISIC 3.1 2-digit level: (i) reliance on external finance (EFD), (ii) liquidity needs (LIQ), (iii) asset-tangibility intensity (FIX), (iv) physical capital intensity (PCI), (v) human capital intensity (HCI), and (vi) R&D intensity (RDI). See Appendices B.2 and B.3 for further details.

B.4. Country Measures

Composite Institutional Quality Index
Following Knack and Keefer (1995), this composite measure of institutional quality equally weights four components of the Political Risk index in the International Country Risk Guide (ICRG) database, namely: Investment Profile, Law and Order, Corruption, and Bureaucratic Quality. Each of these ICRG indices are re-scaled on a common 0–10 scale, with larger values corresponding to better institutional quality, and aggregated using equal-weights to form our composite Institutional Quality index. Finally, each sub-component is normalized to be between 0 and 1 as is the overall index.
Source: International Country Risk Guide, own computations

Investment Profile Index
ICRG political risk sub-component, ranging from 0 to 12 points, which assesses the government's attitude to inward investment. The investment profile is determined by PRS's assessment of three sub-components: (i) risk of expropriation or contract viability; (ii) payment delays; and (iii) repatriation of profits. Each sub-component is scored on a scale from 0 (very high risk) to 4 (very low risk). Re-scaled on a 0–10 scale and normalized be between 0 and 1.

Law and Order Index
ICRG political risk sub-component, ranging from 1 to 6 points, which assesses both the strength and impartiality of the legal system (the "Law" element) and the popular observance of the law (the "Order" element), and can therefore be interpreted as a measure of the rule of law or judicial capacity. ICRG assesses Law and Order separately, with each sub-component comprising 0 to 3 points. Re-scaled on a 0–10 scale and normalized be between 0 and 1.

Corruption Index
ICRG political risk sub-component, ranging from 1 to 6 points, which assesses the corruption within the political system. It reflects the likelihood that officials will demand illegal payment (in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans) or will use their position or power to their own advantage (in the form of excessive patronage, nepotism, job reservations, "favor-for-favors", secret party funding, and suspiciously close ties between politics and business). Re-scaled on a 0–10 scale and normalized be between 0 and 1.

Bureaucratic Quality Index
ICRG political risk sub-component, ranging from 1 to 4 points, which assesses the institutional strength and quality of the bureaucracy. It represents autonomy from political pressures, strength, and expertise to govern without drastic changes in policy or interruptions in government services, as well as the existence of an established mechanism for recruitment and training of bureaucrats. Re-scaled on a 0–10 scale and normalized be between 0 and 1.

World Bank's Income Classification
The World Bank's analytical classification groups countries into low income, lower middle income, upper middle income, and high income countries based on gross national income (GNI) per capita valued annually in US dollars using a three-year average exchange rate (World Bank, 1989). The cutoff points between each of the groups are fixed in real terms, and the classification is revised once a year. Emerging countries comprise upper-middle income and lower-middle economies, while the high income and the low income economies are assigned to the developed and the least developed countries sub-samples, respectively. Due to the long time coverage of our sample, we resort to the historical country classification of the World Bank since 1987 to allow for changes in income levels of countries over time (World Bank OGHIST). Transitions to either a higher or a lower category can however be volatile as countries' income-per-capita can fluctuate around the threshold. We impose for a country to be reclassified if it has been consistently above a threshold for at least five years, which offers a good compromise between sensitivity to change and smoothing. Table A.1 reports our sample of 103 countries together with its income classification and transition years.
Source: World Bank OGHIST, own computations.

Oil & Gas Rents
The sum of oil rents (% of GDP) and natural gas rents (% of GDP). A country is defined as having high oil and gas rents if the average share of oil and natural gas in GDP (across all years in the sample period) is superior to 15 percent.
Source: World Development Indicators (WDI), World Bank, own computations.

OFC Countries
We exclude financial centers following the classification of Lane and Milesi-Ferretti (2018). After combining capital flows data with our UNIDO sample, this step implies the exclusion of the following countries throughout the analysis: the Bahamas, Belgium, Cyprus, Hong Kong SAR, Luxembourg, Malta, Mauritius, Netherlands, Panama, Singapore, Switzerland, and the United Kingdom.
Source: Lane and Milesi-Ferretti (2018).

Change of Domestic Credit to the Private Sector ($\Delta Dom.Credit_{jt}$)
It is computed as the log-difference of domestic credit to the private sector expressed as a fraction of GDP for country j in period t. Credit to private sector refers to financial resources provided to the private sector by financial corporations, such as though loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment.
Source: World Bank Development Indicators, World Bank, own computations

Real GDP per Capita ($lnGDPpc_{\mathbf{j,t}}$)
Control variable defined as the logarithm of initial level of output-side real GDP per capita of country j of the respective period t. It is computed as the country's output-side real GDP at chained PPPs (''rgdpo'', in mil. 2005US$) divided by the country's population (''pop'', in millions).
Source: Penn World Table, version 9.1, own computations

Capital Inflows (CF_{jt})
Capital inflows variables based on IMF Balance of Payments (BOP) data. The BPM5 and BPM6 versions of the BOP data are used to maximize coverage. We focus our attention on ''gross'' capital inflows, i.e. capital flows coming from non-residents (liability side). The period average capital flows for each country is computed as the simple arithmetic average of yearly figures, imposing the use of at least two years of non-missing data.

Private Capital Inflows
Total capital inflows to the private sector based on IMF BOP data, which include flows to banks and to the non-financial sector. We exclude from private flows the following components: derivatives, reserve assets, Special Drawing Rights (SDR) allocation, other investment equity, and IMF lending. The measure covers equity inflows (FDI + portfolio equity investments) and debt inflows (portfolio debt investments + other investment.)

Official Debt Inflows
Total debt inflows to the official sector based on IMF BOP data, where the official sector covers both the monetary authority and the central government. It comprises (i) portfolio debt inflows to the official sector (e.g., foreign investors investing in sovereign bonds) as well as (ii) other investment debt inflows, including among other items, loans and credit given by the IMF and other official institutions such as regional development banks or the World Bank, and bilateral loans.

Official Debt Flows from AKV
Official flows are provided in net forms. Based on the World Bank's International Debt Statistics (IDS) and the OECD's Development Assistance Committee (DAC) database on official development assistance. The IDS data provides a decomposition of a country's long-term external debt by type of creditor. Long-term public debt is divided into private non-guaranteed external debt (PNG) and

public and publicly guaranteed external debt (PPG). The PPG debt is then further split by the type of creditor, into PPG debt from official creditors (multilateral and bilateral lenders) and PPG debt from private creditors (commercial banks, bonds, and other). The data is available for the subset of countries classified by the World Bank as developing, because these countries are required by the World Bank to report the amounts and types of foreign debt, including the creditor side, in order to be eligible for international borrowing.
Source: Avdjiev et al. (2018)'s data, based on World Bank's IDS and OECD-DAC

C. Complementary Evidence to Section 3

Table C.1. Capital Flows to the Private Sector, Sensitivity to Country, Industry and Period

	Panel A				**Panel B**			
Country Samples	**Emerging Countries**				**Least-developed Countries**			
Capital Flows type	**Debt inflows**				**FDI inflows**			
ID proxy	HI (3 cat.)		RS (3 cat.)		HI (3 cat.)		RS (3 cat.)	
	(excl.)	(t-stat)	(excl.)	(t-stat)	(excl.)	(t-stat)	(excl.)	(t-stat)
No exclusion	none	4.132	none	4.610	none	2.798	none	1.219
Influential countries (top3/bot3)								
	PRT	3.807	TTO	4.316	IND	3.132	NPL	1.109
	EST	4.707	JOR	4.878	AZE	-1.136	KHM	1.100
	JOR	4.411	EST	5.083	SEN	2.968	IND	1.523
	THA	3.703	BGR	4.248	MNG	3.141	MNG	1.371
	LTU	3.782	HUN	3.782	CHN	2.695	AZE	-1.199
	BGR	3.779	LVA	3.993	YEM	2.902	IDN	1.390
Influential industries (top2/bot2)								
	34	3.581	33	4.250	29	3.356	35	0.831
	16	3.746	34	3.956	34	2.368	29	1.648
	23	3.675	30	3.921	35	2.320	30	0.833
	15	3.761	23	4.284	36	2.189	27	1.879
Influential periods (top2/bot2)								
	6	3.405	8	3.917	6	3.092	10	1.299
	8	3.144	6	3.876	7	-0.609	4	1.090
	10	3.796	4	4.019	3	2.704	7	-0.225
	4	3.666	10	4.308	4	2.675	8	1.430

Note: This table tests the sensitivity to the sample composition of estimates obtained from the regressions of Table 2 in columns (5) and (6) for debt inflows in emerging countries (reported here in Panel A), and in columns (7) and (8) for equity inflows in least-developed countries (reported here in Panel B). All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. For space considerations, we report only the t-statistics on the estimated coefficient of $CF \times 2.ID$.

Table C.2. Capital Flows to the Official Sector, Sensitivity to Country, Industry and Period

Country Samples	**Emerging Countries**			
Capital Flows type	**Official Debt net inflows *(AKV, off-off flows)***			
ID proxy	HI (3 cat.)		RS (3 cat.)	
	(excl.)	(t-stat)	(excl.)	(t-stat)
No exclusion	none	-2.293	none	-3.187
Influential countries (top3/bot3)				
	KOR	-2.046	MNG	-3.406
	SLV	-2.550	BOL	-2.673
	BOL	-1.855	THA	-2.963
	FJI	-2.029	SLV	-3.548
	GAB	-2.549	KOR	-2.890
	MNG	-2.655	TTO	-3.505
Influential industries (top2/bot2)				
	21	-1.772	32	-2.769
	16	-2.691	30	-2.643
	23	-2.711	29	-2.821
	36	-2.895	21	-2.788
Influential periods (top2/bot2)				
	1	-1.949	4	-2.816
	9	-2.135	6	-2.663
	6	-1.697	8	-2.940
	3	-2.066	1	-2.918

Note: This table tests the sensitivity to the sample composition of estimates obtained from the regressions of Table 4 in columns (5) and (6) for official-official net debt inflows (from AKV dataset) in emerging countries. All regressions are estimated using OLS and include industry-period and country-period fixed effects as well as initial conditions. For space considerations, we report only the t-statistics on the estimated coefficient of $CF \times 2.ID$.

Previous volumes in this series

All volumes are available on our website www.bis.org.