Institutions, Volatility and Investment*

Timothy Besley (LSE and CIFAR)

Hannes Mueller (IAE (CSIC), MOVE and Barcelona GSE)

November 27, 2015

Abstract

Countries with strong executive constraints have lower growth volatility but similar average growth to those with weak constraints. This paper argues that this may explain a strong reduced-form correlation between executive constraints and inflows of foreign investment. It uses a a novel dataset of Dutch sector-level investments between 1983 and 2012 to explore this issue. It formulates an economic model of investment and uses data on the mean and variance of productivity growth to explain the relationship between investment inflows and executive constraints. The model can account for the aggregate change in inflows when strong executive constraints are adopted in terms of the reduction in the volatility in productivity growth. The data and model together suggest a natural way of thinking about country-specific heterogeneity in investment inflows following the adoption of strong executive constraints.

Keywords: foreign investment, volatility, political risk, executive constraints, democracy

*We thank Stephan Litschig, Silvana Tenreyro and seminar participants at CIFAR, University of Sussex and UPF for their comments. We thank Pablo Augustin, Diogo Baptista, Paola Ganum and Heather Sarsons for excellent research assistance. Special thanks goes to De Nederlandsche Bank, in particular, Rini Hillebrand and Henk Prins for the preparation and explanation of the FDI data. Both authors thank the IGC for financial support. Mueller acknowledges financial support from the Ramon y Cajal programme and Spanish Ministry of Economy and Competitiveness, through the Severo Ochoa Programme for Centres of Excellence in R&D (SEV-2011-0075). All errors are unfortunately ours.

1 Introduction

It is now universally acknowledged that political institutions play an important role in shaping patterns of development and growth.[1] Yet, knowledge about the implications of the specific mechanisms remains quite limited and reduced-form correlations yield little insight into this. Hence an important part of the research agenda on institutions and growth is to study specific channels of influence and their associated outcomes.

The effect of institutions on investment, is an important element of this research agenda. Here, for reasons of data availability, we focus on cross-border investment flows by multinational firms. Increases in cross-border capital flows were a notable aspect of the recent era of globalization and the choice of countries for foreign investment provides a potentially important channel for political institutions to have influence. There are good reasons to believe that political institutions will shape the risk/return profile that multinational enterprises (MNEs) face. According to several surveys among executives of MNEs, political risk is consistently the single most important constraint for investment into developing countries over the medium term.[2]

This paper explores the link between the strength of executive constraints and foreign investment flows. We explore the possibility that executive constraints encourage investment because they increase trend productivity growth and\or reduce the variance of productivity shocks affecting growth. We show that this is consistent with a political model where strong executive constraints reduce the discretionary power of the executive. We argue that, theoretically, this is likely to lower policy-induced volatility while having an ambiguous effect on mean growth.

To explore this empirically, we use a panel of sector-level data on Dutch multinationals between 1983 and 2012 provided to us by the Dutch central bank. Although specific to one country, the data are attractive because they cover a reasonably long time period and countries with a range of political institutions. We know for each sector where a multinational chose to invest over this period. The paper first establishes a robust reduced-form correlation between strong executive constraints and foreign investment flows. Most of this effect seems to be coming from sectors which are politically connected in the host country.

To explain these facts we develop a model where executive constraints can lower politically induced volatility by preventing rent extraction by the executive. This, in turn, affects investment incentives. Applying this model to the data, we find that having strong executive constraints is associated with a reduction in the volatility of productivity growth and is also positively correlated with political country risk assessments by the insurance industry. We then show that this reduction in the variance of productivity growth can account for the observed magnitude in the reduced-form relationship between investment inflows and executive constraints. This offers a distinctive perspective on the role of institutions and the mitigation of policy risk. It also provides a specific interpretation for the massive increase in investment inflows with the

[1] See, for example, North (1990), North and Thomas (1973), Acemoglu et al (2005) and Acemoglu and Robinson (2012) for big picture discussions.

[2] These surveys are conducted by the Multilateral Investment Guarantee Agency (MIGA) of the World Bank Group and have between 100 and 500 respondants. For details see MIGA (2014).

adoption of strong executive constraints.

We demonstrate the usefulness of this theory-driven approach by using it to simulate country-by-country counterfactual investment flows for countries that adopted strong executive constraints. The findings suggest that the reduction in the volatility of productivity shocks had a larger impact on investment inflows in some cases. For example, the estimates suggest that investment inflows to Poland and South Africa would have been less than half what was observed had productivity growth not become more stable after the adoption of strong executive constraints.

The remainder of the paper is organized as follows. The next section discusses related literature. We then introduce the data and present some reduced-form evidence. Section four looks at a mechanism suggested by the theory. It applies a specific model to explain the pattern of investment inflows among countries that adopted strong executive constraints over the period of our data. Section five offers some concluding comments.

2 Related Literature

This paper is related to the large literature on democracy and economic performance such as Barro (1996), Papaioannou and Siourounis (2008), Persson and Tabellini (2009a,b), and Przeworski and Limongi (1993). It is now generally recognized that there is no simple empirical story to be told and that there could be considerable heterogeneity as discussed in Persson and Tabellini (2009b). Of more specific relevance are those papers that have pointed out democracies are less volatile than non-democracies; see, for example, Acemoglu et al (2003), Almeida and Ferraira, (2002), Moborak (2005), and Weede (1996).

Also relevant to what we do is the literature on macro economic volatility in emerging economies. Aguiar and Gopinath (2007) observe that shocks to trend growth—rather than transitory fluctuations around a stable trend—are the primary source of fluctuations in emerging markets. This observation is in line with the idea that slow-moving political factors are behind growth trends.[3] Koren and Tenreyro (2007) separate growth volatility on the country level from sector-specific volatility. They find that, as countries develop, their productive structure moves from more volatile to less volatile sectors and volatility of country-specific macroeconomic shocks falls. Our ideas are also related to the observation by Calvo (1998) that "sudden stops" in capital flows occur in countries because there is policy flexibility; local governments are more constrained in their policy choices creating less policy risk. This literature has not yet connected directly to that on changing political institutions and the impact on volatility.

There is also a large literature which links institutions, measures of risk and foreign direct investment. In the 1990s, most research on the influence of policy-related variables on FDI flows consisted of international cross-country studies. This found a negative link between institutional uncertainty and private investment (Brunetti and Weder (1998)), a positive relationship between FDI and intellectual property protection (Lee and Mansfield (1996)), and a negative impact of corruption on FDI flows (Wei (2000)). Using different

[3] We adopt their economic framework but, for simplicity, model volatility as a period-to-period variance.

econometric techniques and periods, Harms and Ursprung (2002), Jensen (2003), and Busse (2004) find that multinational corporations are more likely to be attracted to democracies. Li and Resnick (2003) argue that the location decision is influenced by political risk.[4] Alfaro et al (2008) show that there is a significant relationship between capital flows and a composite index of institutional quality in a variety of specifications. Jensen (2008) looks at the link between political risk and FDI. He runs cross-country regressions for a sample 132 countries finding a negative correlation between FDI and measures of risk. Jensen also finds that the strength of executive constraints, in particular, is associated with lower political risk.

Exploiting panel data for 73 countries between 1995 and 1999, Egger and Winner (2005), find evidence of a positive correlation between corruption and FDI. They argue that, with high levels of regulation and administrative controls, corruption may serve as a "helping hand" for FDI. Using a panel data set on 55 developing countries for the period 1987-95, Harms (2002) estimated the impact of financial risk on equity investment flows (i.e., the sum of FDI and portfolio investment) and found that lower financial risk is associated with an increase in FDI and portfolio investment. In similar vein, Gourio et al (2015) look at the link between capital flows and stock markets for a sample of 26 emerging market economies with stock market data finding that uncertainty in the form of stock market volatility is negatively related to capital inflows.

Papaioannou (2009) uses data on inter-bank lending to show that financial flows increase when the political risk rating by the Political Risk Services (PRS) falls. This rating is a composite index that captures a broad set of factors including ethnic tensions, corruption, and the political, legal, and bureaucratic institutions of a country. He uses both a long panel for 50 recipient countries and a cross-sectional IV strategy to demonstrate the association between financial flows and the risk rating. His IV estimates suggest that a 10 point increase in institutional performance leads to a 60%-70% increase in inflows. Kesternich and Schnitzer (2010) consider how political risk impacts the firms choice of capital structure. Using data on German multinationals, they find that greater risk, as measured by the PRS, tends to increase leverage.

We make three main advances over prior work. First, we use a long panel of sector-level investments for a large number of countries which allows us to exploit rare changes in political institutions while controlling for a large set of country/sector fixed effects. The sector level data also allows us to illustrate that political factors are at the heart of changes in inflows. Second, we go beyond a reduced-form approach and explore a specific mechanism working through a reduction in aggregate volatility. This link also provides a possible explanation for the relationship between macro economic volatility and investment flows.

Finally, our work is related to work on the role of policy uncertainty for economic activity. Rodrik (1991) argues that even low levels of policy risk about the implementation of reforms can prevent inflow of foreign capital into developing markets.[5] Baker, Bloom and Davis (2015) provide a measure of policy uncertainty using news reports. They find negative effects of uncertainty for firms heavily exposed to government

[4] A related literature looks at the impact of institutions on comparative advantage and, hence, trade flows. See Nunn and Trefler (forthcoming) for a literature overview.

[5] Handley and Limao (2015) show that reduced uncertainty about future European trade policies can explain a large fraction of growth in firm entry and sales of Portuguese firms.

contracts. In our paper, we posit that the absence of executive constraints may be a key driver of increased risk and suppose that investors might learn from the experience of other countries with the same institutional set-up.

3 Data and Reduced-Form Evidence

In this section, we explore the relationship between political institutions and foreign investment using a reduced-form difference-in-difference approach. Specifically, we will ask how different configurations of political institutions affect the way that foreign investment is allocated across countries exploiting within-country variation. We will use the findings from this exercise to motivate an approach based on a specific mechanism.

3.1 Data and Background Facts

Our main data set comes from *De Nederlandsche Bank* (DNB). The Central Bank provided us with quarterly, sector-level data from 1983 to 2012 for a sample of more than 200 territories, entities and countries. Since we are interested in the connection between foreign investment and political institutions, we merge this data with the Polity IV dataset on political institutions by country. Following this, we are left with yearly data on 156 countries between 1983 and 2012. We focus on gross positive investment inflows by multinationals to countries. Details on the definition of the investment variable and other data are in the Appendix. Since we have sector level data, we include country/sector fixed effects.[6]

We will focus on executive constraints as our core measure of political institutions. Much of the literature on political institutions and economic performance treats democracy as an aggregate outcome based on the index in Polity IV. We use a more disaggregated approach because, from a theoretical perspective, we believe that there is a persuasive argument for why executive constraints matter for foreign direct investments; this is also the case empirically. Strong executive constraints are reasonably rare in the Polity IV data; only 20% of country year observations since 1950 have the highest score for executive constraints which is much smaller than the group of countries that regularly hold contested elections (around 50%).

The main advantage of our data comes from the wide range of countries and the length of the time period which spans a number of institutional changes and hence allows us to exploit within-country variation.[7] Other datasets with a larger coverage in terms of countries and years, for example UNCTAD or the OECD, do not publicly provide data disaggregated by sector, country and year. In this sense the data is fairly unique in that it allows us to study changes by sector over time for a large panel of countries.[8] Since our data comes from a single country, we are able to focus on variation in the characteristics of recipient countries. We do not, however, have any detailed account of how investment flows are used and whether, for example, they

[6] All our results are robust to restricting the sample to the largest sectors. Note that of 21 sectors, the largest 14 sectors account for more than 99 percent of all investment flows from the Netherlands over this period.

[7] Coverage in the foreign direct investment dataset provided by the U.S. Bureau of Economic Analysis (BEA), for example, is much lower - it covers about 1/3 of the country years in our dataset. This also means that coverage is sparse. Hungary and Poland, the only countries in Eeastern Europe that appear in the BEA dataset receive their first flows in 1999.

[8] This is an advantage stressed also by Poelhekke (2015) who uses similar data from the Dutch Central Bank.

are leveraged locally. Our focus, therefore, differs from that of the FDI literature which studies vertical and horizontal patterns of FDI as an alternative to trade which requires more detailed firm-level data which we do not have.

3.2 Empirical Specification

We use information on gross yearly investment flows from the Netherlands for the period 1983-2012. As a robustness check, we will run the same specifications with aggregate investment flows at the country level and use data on investment flows from the OECD and UNCTAD. The latter ensures that our results are not driven by any peculiarity in the behavior of Dutch multinationals. Let $\delta_{ct} \in \{S, W\}$ denote whether country c at time t has strong (S) or weak (W) executive constraints based on a Polity IV value of 7 to define strong constraints. From this we construct the indicator variable $\Omega(S) = 1$ and $\Omega(W) = 0$ denoting which political institution is in place.

Figure 1 provides a preliminary look at the relationship between strong executive constraints and investment. The graph shows mean investment flows for the sample of countries in the data for the 1983-2012 period whose executive constraints have not transitioned to strong constraints. It shows that countries with strong executive constraints benefitted much more from the wave of investment flows associated with globalization from the mid 1990s onwards. Thus, mean yearly flows from the Netherlands into countries with strong executive constraints were about 20 billion Euros towards the end of the 2000s compared with less than 2 billion in the sample with weak executive constraints. This relationship between investment and strong executive constraints is preserved even if we include controls for population, GDP per capita or the level of GDP.[9] While our regression analysis exploits only within-country variation, it is worth noting that having strong executive constraints at the beginning of the 1980s is a good predictor of investment inflows thereafter. But a sterner test will be to see whether countries that adopted strong executive constraints gain a dividend similar to that seen in the cross-sectional pattern.

Our core outcome variable is the gross investment inflow to a particular country c in a given year t. This is a non-negative variable which takes on positive values with a large number of zeros. Following recent work in the trade literature, we will use a fixed-effects Pseudo Poisson regression model for investment flows.[10] Figure 1 shows that the overall level of global flows increased significantly over time. As countries also tended to switch into strong executive constraints over this period, it is important to identify the effect of this separately from the general time trend in investment flows. We address this issue by using total global flows as the exposure variable in our Pseudo Poisson model, making periods with different total flows comparable. Figure 2 is supportive of this approach; it uses the same sub-samples of countries as shown in Figure 1 but now gives the average share of global flows, as opposed to the average flows, attracted by countries with strong and weak executive constraints. The average *share* has remained remarkably stable

[9] The dramatic increase in FDI flows outpaced GDP growth significantly.

[10] See page 645 of Silva and Tenreyro (2006) who argue that gravity equations can be estimated with the Pseudo Poisson model (PML). We need country/sector fixed effects and therefore follow Wooldridge (1999) simply by using the vce(robust) option in the STATA xtpoisson command. For details, see the discussion on Timothy Simcoe's webpage.

suggesting that the share of the inflow is indeed comparable over time. Pseudo Poisson regression with total inflows as an exposure variable can also be thought of as modelling the annual *rate* of investment inflows into a country in each year.[11]

Following this approach, the core specification that we estimate for the sector-level data is

$$E\left\{x_{sct}:\alpha_{cs},\delta_{ct},y_{ct},X_{st}\right\}=\exp\left(\alpha_{cs}+\gamma\Omega\left(\delta_{ct}\right)+\beta y_{ct}+\log X_{st}\right) \tag{1}$$

where x_{sct} is the inflow of investment in sector s in country s in year t, α_{cs} is a country/sector fixed-effect, and y_{ct} denotes other controls that we include. The exposure variable here X_{st} is total investment flows in sector s in year t.

We will also look at specifications where we look at total investment inflows at the country level, i.e.

$$E\left\{\bar{x}_{ct}:\alpha_{c},\delta_{ct},y_{ct}\right\}=\exp\left(\alpha_{c}+\gamma\Omega\left(\delta_{ct}\right)+\beta y_{ct}+\log X_{t}\right) \tag{2}$$

where $\bar{x}_{ct}$ is total investment in country c in year t and α_c is a country fixed-effect. The exposure variable X_t now captures total investment flows in year t.

3.3 Main Results

Table 1 shows the reduced-form correlations. In panel A we display results at the sector level and in panel B we display results at the country level. Reported standard errors are cluster-robust at the level of the panel variable, i.e. the country/sector in panel A and the country in panel B.

Column (1) presents the core reduced-form finding. The coefficient on strong executive constraints is consistent with an economically important effect in line with the cross-sectional variation in Figures 1 and 2. Investment flows to a country increase by about 88 percent at the sector level and by about 76 percent at the country level when there are strong executive constraints in place. It is important to bear in mind that, through the choice of our exposure variable, we are looking at the rate of investment flows in a country/sector controlling for global flows in that sector. This implies that small and large sectors receive equal weight in Panel A. The similar magnitude of the coefficients in Panel B suggests that smaller and larger sectors react in similar ways to the adoption of strong executive constraints.

Column (2) shows that it is strong executive constraints rather than other measures of institutions that attract investment inflows. Unlike strong executive constraints, there is no significant correlation between high competitiveness and/or openness of executive recruitment and investment flows as measured by the PolityIV data. These are the other dimensions describing the executive that go into calculating country-level "democracy" scores.[12] This observation justifies our focus on executive constraints in what follows.

[11] See Frome (1983) for a discussion of using the Poisson model to study rates. For a general discussion of count data models, see Cameron and Trivedi (2013).

[12] For details see the Polity IV manual codebook. We also used a more flexible specification with regard to the cut-off on executive constraints. This reveals quite clearly that it is the change from 6 to 7 which appears to be important for investment inflows.

The similarity between the sector-level and country total remains a feature of the results.

In column (3) we control for GDP per capita and log GDP per capita from the World Penn Tables. The coefficient on strong executive constraints is unaffected.[13] Moreover, GDP per capita is not significantly correlated with investment inflows. Column (4) aggregates our data on investment and executive constraints to 5 year periods and then includes another important measure of the level of development, years of schooling, for which we use the Barro and Lee dataset. This counters the claim that strong executive constraints may simply be serving as a proxy for omitted human capital.[14] The size of the coefficient on strong executive constraints even increases slightly in this specification. In both panels, the human capital variable is not itself significant in explaining investment inflows, principally because the variable is slow moving and we are including country fixed effects.

Taken together, the results in columns (2) through (4) suggest that the correlation between strong executive constraints and increased investment inflow does not seem to stem from the fact that executive constraints proxy for other political institutions or economic factors. And the findings hold up at both the sector-level and when we look at country averages.

Column (5) tries an alternative measure for investment inflows. This deals with the concern that the results are primarily driven by some large "outlier" values in some sectors/countries. We first measure investment inflows in an industry as a dummy variable that takes the value one if the investment inflows are strictly positive in a given country/industry/year. In column (5) we then add these up to the sector level in panel A and the country level in Panel B. The positive coefficient in both panels in column (5) is interesting since it indicates that the previous results were not driven by changes at the intensive margin alone (more flows in a given industry) but, also at the extensive margin (more industries with inflows).

Finally, in panel B columns (6) and (7) look at two alternative data sources. Column (6) uses investment flows from *all* OECD countries provided by the OECD. Column (7) uses data provided by the UNCTAD which measures flows at the destination country. Our main finding is robust and the size of the coefficient is similar to that found in column (1), 50 and 37 percent respectively.

3.4 Identification

The identification of the effect of strong executive constraints in all specifications comes from variation within countries over time. Our data also allows us to control for almost 1800 country/sector fixed effects which reduces concerns about changes in sectoral composition driving our results at the country level. This a good deal more cautious than most studies on the effect of institutions on economic outcomes. However, to be credible, this requires that there be no common confounding factors driving both changes in institutions and investment flows. The fact that our estimates barely change when we add economic or political controls is re-assuring in this regard.

[13] The finding is similar if instead, we include GDP and/or GDP per capita growth from the World Bank. We also ran a battery of robustness checks with population and log population which all leave results unchanged.

[14] See the discussion in Glaeser et al (2007).

An additional way to look for cofounding factors is to investigate the pattern of flows before and after an institutional change checking for pre-trends in the data. To this end, Figure 3 illustrates the dynamic consequences for investment of adopting strong executive constraints. The graph reports the results of a regression of investment flows on the strong constraints dummy and the adoption year dummy with 4 leads and lags.[15] The graph demonstrates that the effect of adopting strong executive constraints is discrete albeit with a one year lag. Thus, investment inflows respond quickly one year after the change and appear to stay at this higher level thereafter. The theoretical model developed below predicts a level effect on investment of precisely this kind.

We can explore this further by following Persson and Tabellini (2009b) who suggest that foreign "Democratic Capital" could be important in sustaining institutional change. To implement this idea, we use a two-stage procedure where we first predict the adoption of strong executive constraints by using the adoption of such constraints in neighboring countries. In effect, this treats neighbors' adoption of constraints as an instrument for a country's own adoption which would make sense if there are spillovers of democratic values across borders as, for example, in the recent Arab Spring. This exercise, the results from which are reported in appendix Table A8, yields similar results.[16]

Concerns about reverse causality are further ameliorated by focusing on countries where there has been a significant exogenous shock which changed institutions, specifically Eastern Europe. Here, transitions to strong executive constraints were driven by the dissolution of the Eastern Block and it is hard to argue for reverse causality. Our reduced form results get stronger when we focus on this subgroup of countries. Moreover, our model of volatility predicts large changes in flows into these countries.

In the following section we turn towards heterogeneity by sectors which allows us to use specifications with country/year fixed effects which takes care of omitted variables at the country/year level. We find that sectors with political ties experience significantly more inflows than the average sector under strong executive constraints and less inflows under weak executive constraints. This is consistent with the idea that foreign firms regard strong executive constraints as a safeguard against political risk.

3.5 Sector Heterogeneity and Political Connections

We now explore whether sectors are affected differently by the adoption of strong executive constraints and explore how far this could be related to heterogeneous political connections. To this end, we first run a regression of the form in equation (1) but now add interaction terms between the executive constraints dummy, $\Omega(\delta_{ct})$, and 14 sector dummies.[17] The coefficients and their 95% confidence intervals are reported in Figure 4. It is clear from this figure that the results in the previous table are not driven by particular sectors but are fairly evenly spread across sectors. All coefficients are estimated to be positive and none are statistically different from each other.

[15] See Table A1. Figure 3 uses results in column (2). Figure A2 shows the same graph for UNCTAD investment inflows.

[16] A problem with this instrument in our context is that the aforementioned timing of changes in institutions and changes in investment flows which is quite precise. This precision is lost with instrumentation.

[17] In this regression we drop the remaining sectors as they capture less than 1 percent of flows.

This finding notwithstanding, it is still possible that there are factors which affect specific sectors differently across countries and a prime candidate for this is the nature of political connections with government which vary by sector and country.[18] Politically connected firms benefit from ties to the government. However, this could come at a price especially if outsiders (such as foreign investors) are deterred from investing because politicians favor some incumbent firms. We will therefore explore whether foreign investors respond to the extent of political connections in a sector. To the extent that strong executive constraints prevent policies being enacted for private political gain, then there will be a more level playing field for foreign firms so that foreign investment should increase more in response to the adoption of strong executive constraints when a sector has greater political connections.

We explore this conjecture in two datasets which are discussed in detail in the appendix.[19] The first is from Faccio (2006) who provides data on political connections in 35 countries and in 18 of our sectors. We use her data by treating a sector in a country as connected if at least one firm in the sector is politically connected. According to this criterion about one third of all sectors are politically connected. Our second measure comes from the World Bank enterprise surveys which measures political influence directly through interviews with plant managers. We code a sector as politically connected if at least one firm in the sector reports having political influence.[20] From this dataset we were able to merge data on 33 countries and 10 sectors. About half the sectors are politically connected according to the criterion that we use.

To investigate whether inflows vary in their responsiveness to executive constraints according to whether a sector has a greater prevalence of political connections we use the same Pseudo Poisson framework with the same exposure variable. However, now we include country/year fixed effects rather than country/sector fixed effects. It is worth noting that this is extremely demanding in terms of identifying the impact of institutions since all country-specific time varying variables are absorbed non-parametrically by these fixed effects and the effect of institutional change is identified purely from a sector specific measure of political connections interacted with executive constraints. The price is that we cannot now identify a level effect from changes in executive constraints, only an effect that varies depending on whether a sector is politically connected.

Table 2 reports the results. Column (1) uses only the Faccio (2006) data and includes a dummy for whether a sector has political connections along with the interaction between political connection and strong executive constraints. The interaction effect is positive and statistically significant indicating that foreign investment in politically connected sectors increases by about 40 percent with the adoption of strong executive constraints. Column (2) uses our second measure of whether a sector is politically connected and column (3) combines both measures. In each case we find a positive and significant coefficient on the interaction term between being a more politically connected sector and investment responding to strong executive constraints.

[18] This has been explored in some recent contributions such as Fisman (2001), Faccio (2006) and Desai and Olofsgaard (2011).

[19] An additional possibility would be to use industry level data from Nunn (2003). However, we were not able to match a sufficient number of industries in our dataset to his data.

[20] Desai and Olofsgaard (2011) argue that political connections can be measured this way.

Columns (4) to (6) look at the 14 largest sectors from Figure 4.[21] The interaction term is larger in size and is highly significant in all specifications. A chi-squared test reveals that politically connected sectors experience inflows which are higher compared to an average sector under strong executive constraints.[22]

In all cases the coefficient on being a politically connected sector is negative suggesting that political connections tend to be used to protect local firms in such sectors when executive constraints are weak. This hints at the possibility that executive constraints work by reducing influence over politically connected sectors which fosters inflows in these sectors. Although this finding is interesting, we should emphasise that the data for assigning whole sectors as politically connected is limited. But if such incorrect assignment led to classical measurement error, we might expect the effects that we have found to be biased towards zero.

3.6 Additional Results and Robustness

Table 3 explores the robustness of the findings further and also presents some alternative specifications. In parallel with Table 1, it presents results for both sector-level in Panel A and country-level investment flows in Panel B.

In column (1), we include the ICRG measure of property rights protection which is frequently used to capture the consequences of institutions. This variable is available for a shorter time period than our main data. However, it does represent one specific risk that foreign investors may care about. The result in column (1) suggests that stronger property rights protection does indeed have a positive association with investment inflows. However, including this variable does not change the core finding that there is a significant positive correlation between investment and strong executive constraints. So the ICRG variable seems not to be catch-all for *all* formal institutional changes in this context. In fact, with its inclusion, the coefficient on strong executive constraints barely changes from column (1) of Table 1.

In column (2) we exclude observations before 1992 as several countries enter the sample in 1991 so the composition of countries changes. This period, in particular, saw the opening up of the countries of the Eastern block some of which became popular destinations for Western investment. The results are robust to restricting to changes within this time period.

We then look at three alternative ways of capturing the changing global pattern of investment flows in this period. In column (3), we add year dummy variables instead of the exposure option with global flows. This is a less parametric option for capturing the changing global environment for investment. In column (4) we use positive net inflows instead of gross inflows as our dependant variable. Results are robust to this. Finally, column (5), uses the *share* of the investment flow that goes to country c in year t as the dependent variable. This is another way of controlling for the changing pattern of global investment flows. The positive correlation with strong executive constraints and even the size of the effect are robust to both of these specifications.

[21] Results are robust to using more or less sectors.

[22] We also used the specification from Table 1 but added an interaction between political connection and strong executive constraints. The results confirm that the adoption of strong executive constraints mostly affects inflows in politically connected sectors.

4 Exploring a Mechanism

The reduced-form results suggest a robust association between having strong executive constraints and investment inflows exploiting only within-country variation. Countries with strong constraints appear significantly more likely to attract investment and these results are robust to a variety of approaches and controls. But, as with any reduced form estimates, the results offer little clue about *why* this is the case. A first clue comes from our results on heterogeneous effects by sector which suggest that strong executive remove political constraints to investment in sectors which are politically connected. Given the huge importance of political risk reported by multinational firms it is reasonable to explore this mechanism further.

Before we move into the theoretical discussion it is useful to review the meaning of strong executive constraints as measured in the data. The checklist for coders in the Polity IV manual states that the highest score of the variable "xconst" is only allocated if most important legislation is initiated by a parliament which holds the executive to account. Our reading of the country reports is that those coding countries pay a lot of attention to whether the executive relied on support from another organization (this could be, parliament, independent courts or the military) to conduct policy.

In this section, we develop a theoretical approach which is based on Besley and Mueller (2014) and captures these institutional constraints. In this model politics influences trend productivity growth and the variance of productivity shocks around that trend. We use this approach to suggest a more structured approach to the data where we propose a particular measure of volatility and consider whether a change in the predicted volatility following the adoption of strong executive constraints is associated with investment inflows.

4.1 Theory

We begin by developing an economic model with investment by foreign and domestic firms in a world of stochastic productivity which is affected by government policy. We then develop a simple model of politics which shows how executive constraints can affect the mean and variance of shocks to productivity growth.

4.1.1 Economics

Consider an open economy with a fixed number of sectors indexed by i and where π_i be the number of firms in sector i. We study the behavior of a representative firm in each sector. A sector's labor productivity has a time-invariant firm-specific component, ρ_i, and a time-varying country-specific component, Γ_t. The latter is assumed to depend on country-level economic policies along the lines articulated by Aghion and Howitt (2006) and evolves stochastically over time according to

$$\Gamma_t = \Gamma_{t-1} e^{p_t}$$

where $p_t = \kappa + \varepsilon_t$ with the stochastic time-varying shock to productivity growth being normally distributed, i.e. $\varepsilon_t \sim N\left(-\frac{\sigma_\varepsilon^2}{2}, \sigma_\varepsilon\right)$.[23] In the next subsection, we present a model of the political process in which κ and σ_ε depend on whether a country has weak or strong executive constraints.

Output in the representative firm in sector i is given by the following Cobb-Douglas production function:

$$Y_{it} = \left[(\Gamma_t \rho_i L_{it})^\alpha K_{it}^{1-\alpha}\right]^\eta$$

where $\eta < 1$. This is a Lucas (1978) "span of control" model of firm level heterogeneity where pure profit is a return to owning a specific technology.

Firms hire capital and labor in competitive factor markets. However, we assume a difference in timing between labor and capital decisions. Capital is installed before ε_t is realized while labor is chosen afterwards.[24] The labor market is closed with a fixed stock of labor L. The capital market is open with inflows of capital into foreign owned firms representing investment and the global cost of capital is r.[25] We show in the appendix that this yields the following expression for per capita output which depends only on exogenous variables:

$$y_t = B \times [\Gamma_t]^{\alpha\eta} \left[E[(\Gamma_t)^{\alpha\eta}]\right]^{\frac{(1-\alpha\eta)(1-\alpha)\eta}{1-\eta+\alpha(1-\alpha)\eta^2}} \tag{3}$$

where B is a time-invariant constant. The level of output now depends on the realized period t productivity shock and the ex ante mean and variance of productivity shocks since these affect the incentive to invest. Since we have assumed that the productivity shocks caused by the political environment are exogenous, equation (3) allows us to separate the direct effect of productivity shocks working through $[\Gamma_t]^{\alpha\eta}$ from the indirect effect of inhibited capital accumulation working through $E[(\Gamma_t)^{\alpha\eta}]$.

4.1.2 Politics

We now consider how κ and σ_ε^2 depend on whether a country has strong or weak executive constraints using a stripped down model of politics.[26] The role of executive constraints is to curtail some instances of bad policy making in the spirit of the veto players model of Tsebelis (2002). We will think of this as achieved through the actions of a legislature which can reduce the discretion of the executive.

As above, let $\delta_{ct} \in \{W, S\}$ denote whether a country has strong or weak executive constraints at date t. With weak executive constraints, policy is determined solely by the executive while with strong executive constraints a legislature also influences policy as outlined below.

[23] This implies that $E\left(e^{\varepsilon_t}\right) = 1$.

[24] This is a key assumption and is tantamount to assuming that ex post adjustment costs are very high. Risk would not matter in our framework if capital could be chosen flexibly and costlessly adjusted after ε_t becomes known.

[25] This theoretical approach could be applied to domestic and foreign owned firms alike. For foreign owned firms, the assumption that r is exogenous is, however, more plausible. It would be straightforward, although tedious, to separately model the domestic and foreign-owned sectors of the economy.

[26] The theoretical approach is further developed in Besley and Mueller (2014). It is based on ideas in the political agency literature first developed in Barro (1973) and Ferejohn (1986). Besley (2006) offers a review of the main ideas.

To map politics directly onto our economic model above, suppose that productivity growth p_t depends on policy making represented by a parameter Δ_t which varies stochastically depending of the behavior of policy-makers. While we do not model the micro-foundations of policy making, we have in mind a range of policies that could drive growth along the lines of Aghion and Howitt (2006). The expected productivity growth trend introduced in the previous section is now

$$\kappa(\delta) = E[\Delta_t : \delta].$$

As before we have productivity growth given by $p_t = \kappa(\delta) + \varepsilon_t$ but the error is now $\varepsilon_t = [\Delta_t - \kappa(\delta) + \omega_t]$. This error constists of an *iid* shock ω_t with mean $-\frac{\sigma_\varepsilon^2(\delta)}{2}$ and variance σ_ω^2 and political risk induced by the difference $\Delta_t - \kappa(\delta)$. Accordingly, the variance of productivity around its trend is:

$$\sigma_\varepsilon^2(\delta) = var(\Delta_t : \delta) + \sigma_\omega^2.$$

Thus political institutions affect productivity growth through the mean and variance of Δ_t. We now suggest a simple micro foundation for why executive constraints influence policies Δ_t.

No Executive Constraints $(\delta = W)$**:** In this case, executive competence alone determines productivity growth. We suppose that $\Delta_t \in \{\Delta_L, \Delta_H\}$ with $\Delta_H > \Delta_L$. The probability of Δ_H depends on the competence of the executive with λ denoting the probability that the executive is competent. Then:

$$\kappa(W) = \lambda\Delta_H + (1-\lambda)\Delta_L$$

and

$$\sigma_\varepsilon^2(W) = \lambda(1-\lambda)[\Delta_H - \Delta_L]^2 + \sigma_\omega^2.$$

In this case, it is λ, the competence of the executive, which affects both $\kappa(W)$ and $\sigma_\varepsilon^2(W)$ directly. Greater competence increases the trend rate of productivity growth but has an ambiguous effect on its variance.

Executive Constraints $(\delta = S)$**:** Here we suppose, following coding practice in the data, that a legislature also has a say in making policy. Specifically, it can veto any proposal by the executive and impose a policy which yields $\Delta_0 \in [\Delta_L, \Delta_H]$. One interpretation of this is as maintaining a status quo rather than allowing policy activism.[27] The key assumption is that this is a moderating influence since the payoff of this policy lies between the bad and good outcomes achieved under pure executive discretion.

We model the imposition of this default outcome in a reduced-form way, supposing that Δ_0 is imposed with probability ϕ_J $(J \in \{L, H\})$ when the executive would have generated growth of Δ_J. If $\phi_H > 0$, the constraint results in discretion sometimes being removed even when the outcome would have been Δ_H. However, if $\phi_L < 1$, the legislature can prevent a policy error that would have resulted in a payoff of Δ_L.

[27] This in the spirit of Tsebelis (2002) who argues that having more veto players increases status quo bias in political systems.

Thus the pair $\{\phi_H, \phi_L\}$ represent the competence of the legislature.

Now define:

$$\tilde{\Delta}_J = \left[\left(1-\phi_J\right)\Delta_J + \phi_J \Delta_0\right].$$

Using this, the key model parameters determining productivity growth are:

$$\kappa(S) = \lambda\tilde{\Delta}_H + (1-\lambda)\tilde{\Delta}_L$$

and

$$\sigma_\varepsilon^2(W) = \lambda(1-\lambda)\left[\tilde{\Delta}_H - \tilde{\Delta}_L\right]^2 + \sigma_\omega^2.$$

Comparing this to the case without executive constraints, these parameters now depend not only on the competence of the executive, λ, but also the competence of the legislature $\{\phi_H, \phi_L\}$ and the quality of the default policy Δ_0.[28]

4.1.3 Empirical Implications

We now develop two implications of the theory which are crucial to developing an empirical application. The first is a prediction about productivity growth across political regimes and the second concerns the impact on investment.

For productivity growth and volatility we have:

Proposition 1 *Trend productivity growth may be higher or lower with strong executive constraints, i.e.*

$$\kappa(S) \gtrless \kappa(W) \text{ as } \lambda\phi_H\left[\Delta_H - \Delta_0\right] + (1-\lambda)\phi_L\left[\Delta_L - \Delta_0\right] \gtrless 0$$

The variance of the productivity shocks ε_t is unambiguously lower under strong executive constraints, i.e.$\sigma_\varepsilon^2(S) < \sigma_\varepsilon^2(W)$.

The mean effect depends on whether the constraints predominantly allow good executive discretion and eliminate bad use of discretionary policy. However, the reduction in the variance holds regardless of this as long as the default policy induces moderation, i.e. $\Delta_0 \in [\Delta_L, \Delta_H]$. If executive constraints always impose the default $\phi_H = \phi_L = 1$ then productivity growth $\kappa(S) = \Delta_0$ always and the model features no volatility due to policy. The model has, as another special case, a perfectionist view of executive constraints in which $\phi_H = 0$ and $\phi_L = 1$. In this case the outcome Δ_L is replaced by Δ_0 under strong executive constraints.[29]

We now use this comparison to derive implications for investment with and without executive constraints. The optimal capital stock, and hence investment, at the firm level depend on the expected productivity growth and its volatility. Investors should therefore react to changes in these. Following the evidence above,

[28] In Besley and Mueller (2014), λ is derived as an endogenous variable and also varies with executive constraints.

[29] The key assumption that drives the comparison of the variances is that $\Delta_0 \geq \Delta_L$, i.e. that the legislature can never makes things worse by vetoing what the executive does.

we are interested in understanding the implications for foreign owned firms and hence investment. But if we had good country level firm or sector specific data on firms, this too could be used. This underlines the benefit of having accurate data on investment at the sector-level for a large number of countries. We will now state the empirical prediction specifically to emphasize the link to the data.

We show in the appendix that the optimal capital stock for firm i is given by

$$\begin{aligned}\ln K_{it}^{*}(\delta) &= \ln C_i - \frac{(1-\alpha\eta)\,\alpha\eta\,(1-\eta)}{2\,(1-\eta+(1-\alpha)\,\alpha\eta^2)}\sigma_{\varepsilon}^2(\delta) \\ &\quad + \frac{\alpha\eta\,(1-\eta)}{1-\eta+(1-\alpha)\,\alpha\eta^2}\kappa(\delta) + \ln\left((\Gamma_{t-1})^{\alpha\eta}\right)^{\frac{1-\eta}{1-\eta+[1-\alpha]\alpha\eta^2}}\end{aligned} \tag{4}$$

where C_i is a sector-specific constant. Equation (4) shows that investment incentives follow the deep parameters of the productivity growth process $\kappa(\delta)$ and $\sigma_{\varepsilon}^2(\delta)$. In this way changes in the political institutions $\delta_t \in \{W, S\}$ have a direct implication for investments given by:

Proposition 2 *The optimal capital stock of foreign firms is increasing in $\kappa(\delta)$ and decreasing in $\sigma_{\varepsilon}^2(\delta)$.*

Thus, the model predicts that investment will respond to changes in $\left\{\kappa(\delta), \sigma_{\varepsilon}^2(\delta)\right\}$. This gives an immediate link to the reduced-form findings above where we found that inflows of investment were higher under strong executive constraints. However, since Proposition 1 shows that $\kappa(\delta)$ can increase or decrease under strong executive constraints, the overall prediction for investment from the adoption of executive constraints using the theoretical model is ambiguous.

Proposition 2 motivates trying to decompose the outcome into an effect coming through mean productivity growth $\kappa(\delta)$ and its variance $\sigma_{\varepsilon}^2(\delta)$. To that end, we will first estimate $\kappa(\delta)$ and $\sigma_{\varepsilon}^2(\delta)$ from aggregate growth data. We show in the Appendix, that mean output growth, $\mu_g(\delta)$, and the variance of growth $\sigma_g^2(\delta)$ can be used to derive estimates of the productivity parameters $\left\{\hat{\kappa}(\delta), \hat{\sigma}_{\varepsilon}^2(\delta)\right\}$ from:

$$\hat{\kappa}(\delta) = \frac{1-\eta+\alpha\eta}{\alpha\eta}\hat{\mu}_g(\delta) + \frac{1-\alpha\eta^2+\alpha^2\eta^2}{2\,(\alpha\eta)^2}\hat{\sigma}_g^2(\delta) \tag{5}$$

and

$$\hat{\sigma}_{\varepsilon}^2(\delta) = \left(\frac{\hat{\sigma}_g(\delta)}{\alpha\eta}\right)^2. \tag{6}$$

In the following section we will use the estimated parameters $\left\{\hat{\kappa}(\delta), \hat{\sigma}_{\varepsilon}^2(\delta)\right\}$ from equations (5) and (6) to explain investment inflows motivated by (4). This will allow us to decompose the effect of adopting strong executive constraints into an effect operating through a change in trend growth and a change in the variance of productivity shocks. In line with Proposition 1, we will see whether the variance reduction can explain the reduced form finding in the previous section.

4.2 Evidence

We will first show that executive constraints do indeed affect the mean and variance of growth in line with our political model. We then use equations (5) and (6) to construct empirical measures of expected productivity in different political regimes, $\left\{\hat{\kappa}(\delta), \hat{\sigma}_{\varepsilon}^2(\delta)\right\}$.

As a final step we estimate a model of investment in which $\hat{\kappa}(\delta)$ and $\hat{\sigma}_{\varepsilon}^{2}(\delta)$ drive investment decisions. This allows us to explore heterogeneous responses to institutional change via the mechanism suggested by Proposition 2.

4.2.1 Executive Constraints and Growth

There are strong empirical regularities in the relationship between growth and executive constraints. The core facts are illustrated in Table 4, panel A which gives some summary statistics for real GDP per capita growth from the Penn World Tables differentiated according to whether a country has strong or weak executive constraints. The first part of the table summarizes the raw data for the full sample of countries between 1970 and 2010. The sample of country/year observations with strong executive constraints grew by 2.2 percent on average while the sample with weak executive constraints grew by 1.9 percent on average. This difference in average growth between the two groups is negligible and is not statistically significant. There is, however, a large difference in the second moments between the two groups. The variance of growth is roughly 3.5 times higher in the sample of countries with weak executive constraints and the difference is statistically significant at 5%.[30] This observation is consistent with the prediction in Proposition 1.

The second part of Table 4, panel A shows that this difference across regimes based on variation in political institutions is not driven purely by cross-sectional differences in growth. This observation is important in light of the well-known fact that poorer countries, which tend to have weak executive constraints, also have more volatile growth rates.[31] If we restrict the sample to those countries that spent at least five years in both strong and weak executive constraints between 1970 and 2010, the same basic picture emerges of a similar level of growth along with lower variance when strong executive constraints are introduced.

The evidence in Table 4 suggests that a change from strong to weak executive constraints induces a mean preserving spread in growth rates. Figure 5 confirms this visually by plotting Kernel densities for growth rates under strong and weak executive constraints. The distribution of growth rates is approximately normal. The more extreme outcomes (high and low) under weak executive constraints are clearly visible. The share of country/year observations with a negative growth rate under weak executive constraints is 32 percent but only 22 percent under strong executive constraints despite very similar average growth rates.

Prima facie, this finding gives credence to the idea that we might explain the reduced-form finding above as being due to a reduction in risk as measured by the volatility of productivity growth. Under the assumption that investors understand this relationship, we should expect an effect on investment from lower volatility. Equations (5) and (6) allow us to move from the mean and variance of growth to the parameters which affect investment according to the theory. To illustrate we use these equations and the growth summary statistics in Table 4, panel A to produce estimates of $\left\{\hat{\kappa}(\delta), \hat{\sigma}_{\varepsilon}^{2}(\delta)\right\}$ in Panel B. We need to postulate values of α and η for this purpose and we set them $\alpha = \frac{2}{3}$ with $\eta = \frac{3}{4}$.[32] Unsurprisingly, in light

[30] The F statistics of the test in the full sample is F = 3.8.

[31] See, for example, Koren and Tenreryo (2007).

[32] Changing these assumptions in a reasonable interval does not change our results much.

of (6), our observation on the variance of growth maps into a prediction about $\hat{\sigma}_{\varepsilon}^{2}(\delta)$. The variance under weak executive constraints is about four times higher than the variance under strong executive constraints.

4.2.2 Updating

According to our theory, investment is affected by expectations about the key parameters: $\left\{\hat{\kappa}(\delta), \hat{\sigma}_{\varepsilon}^{2}(\delta)\right\}$. We would expect such expectations to be informed by country-specific as well as world experiences of growth under strong and weak constraints.[33] If a country has never been in strong executive constraints, then we need to decide what is a reasonable expectation about the change in $\kappa(\delta)$ and $\sigma_{\varepsilon}^{2}(\delta)$ that takes place. This could simply be based on past global experience or it could take into account the experience of the country in question. So, for example, after five years in strong executive constraints, it seems reasonable to think that the country's own growth experience will become salient to investors rather than just the average experience of all countries in the world.

We approach this issue by building a Bayesian model of expectations formation for beliefs about trend productivity growth and its variance across political regimes. We show that this leads naturally to a "treatment effect" from strong executive constraints which is heterogenous with respect to the timing and a country's experience. This seems natural. For example, the East Asian crisis of the mid-1990s is in our time period and countries which made a transition before or after that would surely have taken that experience into account when assessing volatility. Moreover, some countries may have experienced greater reductions in growth volatility depending on their starting point.

Our model is a standard Bayesian learning model with normally distributed shocks. It provides a natural framework to construct the *expected* trend productivity growth and variance as a function of the political regime, $\{\hat{\kappa}_{ct}(\delta), \hat{\sigma}_{\varepsilon ct}(\delta)\}$. The procedure we propose has two steps. First, we use standard formulae to model evolving expectations of $\hat{\sigma}_{g}^{2}(\delta)$ and $\hat{\mu}_{g}(\delta)$. These are updated over time in the light of new data realizations. Second, we use these estimates to calculate the parameters of productivity growth using (5) and (6).

Applying Bayesian Updating to Growth Data Consider a sample of countries which move between weak to strong executive constraints in the period for which we have investment and growth data, i.e. 1983-2010. For countries that adopt strong (or weak) executive constraints for the first time, we suppose that investors use the growth experiences of *other* countries that have had strong executive constraints to form their prior. Specifically, we allow the prior belief to be based on observations for *all* countries between 1970 and the date at which the transition to strong executive constraints takes place in country c. For the subsequent updating, we consider two possibilities:

Worldwide updating: Here we suppose that investors continue to use information on all countries as they update their estimate of the mean and variance of growth. This approach limits the extent to which

[33] This idea is similar in spirit to Buera et al (2011) which studies the diffusion of policy across nations as a learning process.

the effect of institutional transitions is heterogeneous by country.

The regressors that we include to represent the expected mean and variance in this case are:

$$\widehat{mn}_{ct} = \Omega\left(\delta_{ct}\right)\hat{\mu}_g\left(S,t\right) + \left[1 - \Omega\left(\delta_{ct}\right)\right]\hat{\mu}_g\left(W,t\right) \tag{7}$$

and

$$\widehat{var}_{ct} = \Omega\left(\delta_{ct}\right)\hat{\sigma}_g^2\left(S,t\right) + \left[1 - \Omega\left(\delta_{ct}\right)\right]\hat{\sigma}_g^2\left(W,t\right) \tag{8}$$

where $\hat{\sigma}_g^2\left(\delta,t\right)$ is the sample variance of growth in regime δ for all countries between 1970 and time t and $\hat{\mu}_g\left(\delta,t\right)$ is the sample mean growth in regime δ for all countries between 1970 and time t.[34] Every year both $\widehat{mn}_{ct}$ and $\widehat{var}_{ct}$ are updated with the new growth data. Variation in $\{\widehat{mn}_{ct}, \widehat{var}_{ct}\}$ across countries, in this case, comes purely from them having different transition dates.

Using this measure, a change from $\delta_{ct} = W$ to $\delta_{ct} = S$ reduces the expected variance of growth, $\widehat{var}_{ct}$, (on average) from 0.029 to 0.007, i.e. by about 0.022. The mean and variance are updated annually in response to the world-wide experience of growth in different institutional regimes. The late 1990s saw a significant increase in the growth volatility in countries with weak executive constraints, $\hat{\sigma}_g^2\left(W,t\right)$, due to the East Asian crisis followed by a later decline.[35]

Country-specific updating: We now allow the mean and variance to be updated based on a particular country's growth experience when it adopts strong executive constraints. To explain this, suppose that a country has a single transition in our data period.[36] When country c transitions we proceed as above, basing the prior for the new regime on all countries in the world from 1970 onwards. Specifically, we use growth data between 1970 and time t from all countries to construct the following data moments:

$$G^1\left(\delta,t\right) = \hat{\mu}_g\left(\delta,t\right) \text{ and } G^2\left(\delta,t\right) = \hat{\sigma}_g^2\left(\delta,t\right) + \hat{\mu}_g^2\left(\delta,t\right).$$

When a country transitions, the issue of arises of how much weight (D) to assign to the history of other countries, i.e. how much weight to give to $G^1\left(\delta,t\right)$ and $G^2\left(\delta,t\right)$. In general, we can write the updated country-specific mean of growth as

$$\hat{\mu}_{gct}\left(\delta, \tau\left(c\right) + D\right) = \frac{D \times G^1\left(\tau\left(c\right), \delta\right) + \sum_{s=1}^{t} g_{cs}\left(\delta\right)}{D + t}$$

[34] The formula ignores that $\sigma_t^2\left(\delta\right)$ and $\mu_t\left(\delta\right)$ are constructed from a finite sample. Given the size of almost 2000 observations this has very little effect.

[35] Appendix Figure A3 shows how the beliefs about the standard deviation of GDP growth changed over time in the two regimes.

[36] The same basic approach can be used to form in expectations when there are multiple institutional transitions. In such cases, we assume investors recall what happened previously in a particular institutional regime. Our results are all robust whether or not we include countries with multiple transitions.

where t is the time that a country is in a regime $\delta = S, W$ and $\tau(c)$ is the year in which the country transitioned into this regime. In general the estimate of mean growth at $t > \tau(c)$ is a weighted average between $G^1(\tau(c), \delta)$ and $\sum_{s=1}^{t} g_{cs}(\delta)$. The country's specific growth history enters through the latter term. A higher value of D means that more weight is given to the growth history of other countries with the same institutions. Importantly, the longer a country is in a regime, i.e. the higher t, the more weight is put on the particular growth history of the country. If $D = 10$, for example, it takes a decade under the new regime until half the weight is placed on the particular experience of the country. Analogously we have

$$\hat{\sigma}^2_{gct}(\delta, \tau(c) + D) = \frac{(D+t) \times \left[D \times G^2(\tau(c), \delta) + \sum_{s=1}^{t} [g_{cs}(\delta)]^2\right] - \left[D \times G^1(\tau(c), \delta) + \sum_{s=1}^{t} g_{cs}(\delta)\right]^2}{(D+t-1)(D+t)}$$

using the standard formula for updating the sample variance of a normally distributed variable.[37]

We will vary the weight placed on the initial value compared to the country-specific, post-transition history and consider three cases: $D = 2$, $D = 10$, $D = 100$ and $D = 1000$. For $D = 1000$, the country's growth history under the new regime receives almost no weight. At the other extreme where $D = 2$, the growth experience in other countries receives little weight. By experimenting with different weights, we will assess the sensitivity of our findings.

To construct the predicted mean and variance as a function of institutions, we now use:

$$\widehat{mn}_{ct} = \Omega(\delta_{ct}) \hat{\mu}_{gct}(S, t) + [1 - \Omega(\delta_{ct})] \hat{\mu}_{gct}(W, t) \tag{9}$$

and

$$\widehat{var}_{ct} = \Omega(\delta_{ct}) \hat{\sigma}^2_{gct}(S, t) + [1 - \Omega(\delta_{ct})] \hat{\sigma}^2_{gct}(W, t) \tag{10}$$

where the estimates of $\left\{\hat{\mu}_{gct}(\delta, t), \hat{\sigma}^2_{gct}(\delta, t)\right\}$ are now country-specific. This model of expectations formation is in effect allowing for a heterogeneous effect on investment of an institutional transition based on the regime-specific growth history for all countries as well incorporating heterogeneity through learning from a country's growth experience in a regime. The Bayesian learning framework imposes a specific form of heterogeneity. However, by varying D, we can give different weights to the two elements that go into the calculation of the expected mean and standard deviation of growth.

[37]So see this set $D = 0$ which gives the standard sample variance formula $\hat{\sigma}^2_{ct}(\delta, 0) = \frac{t \times \sum_{s=1}^{t} g^2_{cs}(\delta) - \left[\sum_{s=1}^{t} g_{cs}(\delta)\right]^2}{(t-1)t}$.

Trend Productivity Growth and Its Variance Whether we use worldwide or country-specific estimates of the mean and variance of growth, we can calculate productivity growth given by our economics model

$$
\begin{aligned}
\hat{\kappa}_{ct} &= \frac{1-\eta+\alpha\eta}{\alpha\eta}\widehat{mn}_{ct} + \frac{1-\alpha\eta^2+\alpha^2\eta^2}{2\left(\alpha\eta\right)^2}\widehat{var}_{ct}, \\
\hat{\sigma}^2_{\varepsilon ct} &= \frac{\widehat{var}_{ct}}{\left(\alpha\eta\right)^2}.
\end{aligned}
$$

Figure 6 provides a first impression of what the data say using country-specific updating. The figure shows the mean estimate of $\hat{\sigma}_{\varepsilon ct}$ for $\delta = W$ in red and for $\delta = S$ in blue and contrasts this with the mean global share of inflows in the two episodes. Figure 6 illustrates clearly that strong executive constraints reduces the estimated variance for most countries. The general move in a north-westerly direction is clearly visible in this Figure. The heterogeneity in country experiences is also apparent. The countries in the sample are quite diverse including, for example, Poland, South Africa, Turkey and Argentina. In addition, several countries, like Argentina, move from high executive constraints to low executive constraints. We discuss robustness with regard to the sample below.

The Relationship to Political risk One useful way to validate our measures of trend productivity growth and its variance is to see whether they are related to political risk measures produced by the insurance industry which assists multinationals in reducing their exposure to political risk by allowing them to purchase insurance. The providers of this political risk insurance include private market participants, including Sovereign, Zurich, Chubb, Lloyd's of London, Aon, AIG, and government agencies such as the U.S. Governments' Overseas Private Investment Corporation (OPIC) or the Belgian insurer Delcredere Ducroire (ONDD). All of these organizations offer political risk insurance for multinational investors. This insurance is distinct from other types of property insurance; these contracts are designed to insure against specific political events. The political risk insurance industry categorizes these political risks into three broad categories: (1) war and political violence, (2) expropriation/breach of contract, and (3) transfer risk.

We collected data on political risk evaluations from ONDD who, according to their annual report, insured transactions worth about 7 billion EUR in 2011. The variable we use measures the risk of a credit default for reasons beyond the control of the debtor, i.e. due to political or financial macroeconomic events. We choose this variable because it provides the most consistent time-series. ONDD measures both short- and mid-term risk on a scale from 1 (low risk) to 7 (high risk).[38]

Table 5 explores the association between political risk as measured by the ONDD and our two constructed measures. In order to identify the effect of political risk, we exploit changes in the executive constraints regime δ and control for country fixed-effects in all regressions.[39] Both $\hat{\sigma}^2_{\varepsilon ct}$ and $\hat{\kappa}_{ct}$ are correlated with

[38] We use their "short-term" risk measure. Results are similar to using the "mid-term" risk measure instead.

[39] In Appendix Table A2 we show that there is a link between executive constraints, the risk rankings provided by ONDD and the protection of property rights from the International Country Risk Guide (ICRG). On average, countries with strong executive constraints have an ONDD risk ranking which is 2 points (about one standard deviation) lower than countries with low executive constraints.

political risk as measured by the ONDD. Consistent with our theory, higher values of $\hat{\sigma}^2_{\varepsilon ct}$ are associated with higher political risk as assessed by insurers. This is true regardless of whether we use the model with worldwide updating or with country-specific updating. Moreover, the results are robust to all the values of D that we tried.

Table 5 reports coefficients which are normalized by the standard deviation. Thus, the coefficient in Table 5, column (2) implies that a one standard deviation increase in $\hat{\sigma}^2_{\varepsilon ct}$ is associated with a 1.3 point increase in short term risk as measured by ONDD (about half a standard deviation). Note that the association between our measure of volatility and the ONDD risk measure weakens somewhat as $D = 2$. This is interesting as it suggests that a stronger weight needs to be placed on the experience of other countries to describe risk perceptions at ONDD.

Higher expected trend productivity growth, $\hat{\kappa}_{ct}$, is associated with lower risk and at a similar magnitude. There are many reasons beyond the theory why this might be the case. For example, credit default risk may lower with higher productivity growth. In terms of the theory presented in section (4.1.2) this suggests that political risk evaluations could be correlated with λ, the competence of the executive.

4.2.3 Empirical Approach and Results

We now run the following regressions where instead of including strong executive constraints directly, we use our estimates of trend productivity growth and the variance of productivity as a conduit for such constraints to affect outcomes. The sector-level specification is:

$$E\left\{x_{sct} : \alpha_{cs}, \hat{\sigma}^2_{\varepsilon ct}, \hat{\kappa}_{ct}, y_{ct}\right\} = \exp\left(\alpha_{cs} + \gamma_1\left(\hat{\sigma}^2_{\varepsilon ct}\right) + \gamma_2\left(\hat{\kappa}_{ct}\right) + \log X_{st}\right) \tag{11}$$

where x_{sct} is the inflow of investment in sector s in country c in year t. We will also look at specifications where we use the total flow at the country level, i.e.

$$E\left\{\bar{x}_{ct} : \alpha_{cs}, \hat{\sigma}^2_{\varepsilon ct}, \hat{\kappa}_{ct}, y_{ct}\right\} = \exp\left(\alpha_{c} + \gamma_1\left(\hat{\sigma}^2_{\varepsilon ct}\right) + \gamma_2\left(\hat{\kappa}_{ct}\right) + \log X_{t}\right) \tag{12}$$

where $\bar{x}_{ct}$ is the inflow of investment in country c in year t. As before we use the exposure model which controls for global investment flows. In both of these specifications, we expect $\gamma_1 < 0$ and $\gamma_2 > 0$.

In Table 6, column (1) we run a regression in which we use the time-varying estimates of the relevant variance and mean from the model with worldwide updating. Panel A shows results for the sector level and panel B shows results for the country level. All variables in Table 6 are normalized by their standard deviation.

The results in column (1) of Table 6 indicates that a reduction of the variance by one standard deviation increases investment flows by 32 percent. Among the countries that switched we have, on average, $\hat{\sigma}^2_{\varepsilon ct}(W) - \hat{\sigma}^2_{\varepsilon ct}(S) = 0.02$ which is by about two standard deviations.[40] Thus, the adoption of strong executive

[40] There is some time variation, particularly in $\hat{\sigma}^2_{g}(W, t)$. We explored the fact that $(\hat{\sigma}^2_{\varepsilon ct}(W) - \hat{\sigma}^2_{\varepsilon ct}(S))$ varies across time. Indeed, we find that the adoption of strong constraints at times of a larger difference in volatility is associated with a larger

constraints would have boosted investment inflows by over 60 percent by changing investor's expectations from $\hat{\sigma}^2_{\varepsilon ct}(W)$ to $\hat{\sigma}^2_{\varepsilon ct}(S)$.

In columns (2) to (5) we look at four versions of country-specific updating. Column (2) reports results when we put a lot of weight on the previous worldwide experience ($D = 1000$). We reduce this weight to $D = 100$ in column (3), $D = 10$ in column (4) and $D = 2$ in column (5).[41] At $D = 1000$ the entire weight is given to the prior which is coming from the growth histories in all countries. As D decreases, investors increasingly form beliefs about a country's productivity growth process from the history of that country alone. The mean number of years in strong executive constraints is about 10 which implies that with $D = 10$, half the weight in the the calculation of the productivity growth parameters is based on country's own experience.

The results for $D = 10$ in column (4), Panel A suggests that a decrease in the variance of productivity growth by one standard deviation increases investment by about 90 percent. Thus, due to the reduction in volatility, the investment rate almost doubles with the adoption of strong executive constraints.

The structure of our empirical model in equation (11) assumes that firms maximize profits by investing in countries independently of their investments in other countries. An alternative view is that firms conduct investment as portfolio investments in which the covariance of the investment return with the existing investment portfolio matters. A full exploration of this alternative lies beyond the scope of this paper. However, it is worth noting that we do not find that the covariance with mean productivity growth in either the Netherlands, the OECD or the World has a significantly negative influence on investments.[42]

The results consistently suggest that $\hat{\gamma}_1 < 0$ which is consistent with the idea that strong executive constraints change investment inflows because investors expect the country to have a less volatile policy climate.[43] Furthermore, the variation across models in Table 6, Panel B is similar to the pattern we found in Table 5. This suggests that the construction of our measure from the GDP growth variance captures factors that influence both operational risk evaluations and investment. It bears remarking that the correlation between the estimated productivity variance and ONDD risk and investment appears to fall slightly with D which is consistent with the idea that priors are important for both risk evaluations and economic behavior. If our model is correct then investors learn from the performance of other countries when they evaluate rare institutional changes.

Our estimates of $\hat{\gamma}_2$ suggest that investors also respond to an improved outlook for trend productivity growth. An increase by one standard deviation increases investment inflows by around 50 percent. Thus, columns (2) to (4) emphasize that investment is, in principle, responsive to changes in trend productivity growth. However, *on average* trend productivity growth changes very little between strong and weak executive constraints and the adoption of strong executive constraints has very little impact through this channel.

---

increase inflows.

[41] The value $D = 2$ is the lowest possible value that is theoretically sound given the updating formula.

[42] Results are presented in Table A3.

[43] In Appendix Table A4 we also show that the same pattern emerges using the OECD data. In Table A5 we use Dutch positive net inflows. In Table A6 we report results with different samples.

This will become even more clear when we explore the heterogeneity of transitions across countries in the following section.

4.2.4 The Heterogeneous Effect of Institutional Transitions

One advantage of fitting a specific model to the data compared to the difference-in-difference results is that we can gain an insight into heterogeneous effects across countries from institutional changes based on a specific mechanism. To do this, we can exploit both time-series and cross-sectional variation in $\{\widehat{mn}_{ct}, \widehat{var}_{ct}\}$. Countries have benefitted differentially from adopting strong constraints depending on their own particular reduction in policy risk and the effect this had on subsequent investment flows.

To illustrate the importance of heterogeneity across countries, we show how our model can be used to account for changes in investment inflows for each country according to their specific experience.

We construct counterfactuals in which we imagine that the adoption of strong executive constraints did not change either the mean or the standard deviation of growth. We then compare these counterfactuals to the actual values of the fitted model to gain an estimate of the investment flow due to the path of $\{\widehat{mn}_{ct}, \widehat{var}_{ct}\}$ taken by a country according to our model. This gives us an estimate of the change in investment flows which can be attributed to the changing mean and variance for each country.

Table 7 column (1) gives the average yearly investment inflows during the episode of strong executive constraints for each country that changed institutions over our time period.[44] Flows varied significantly between countries with those in Eastern Europe experiencing gross yearly inflows of more than three billion EUR per year. To generate the predicted flows in column (2), we use the estimates from Table 6, column (4), Panel B. The fitted values in column (2) predict the country experience reasonably well.[45]

Columns (3) and (5) report two estimates of how the trend and variance in productivity growth matter for each country. In column (3), we predict investment inflows supposing that $\widehat{mn}_{ct}$ had not changed when strong executive constraints were introduced. For each country this gives a counterfactual investment inflow holding all other influences on investment fixed. We can then compare this to the prediction based on the actual path of $\widehat{mn}_{ct}$ that we have calculated for each country. In column (5) we do something similar holding the the variance of productivity growth fixed as our counterfactual. Heterogeneity across countries in these estimates is now dependent on a country's growth history and its effect on $\{\widehat{mn}_{ct}, \widehat{var}_{ct}\}$.

Column (4) looks at mean growth, $\widehat{mn}_{ct}$ by comparing columns (2) and (3). It reports the log difference between inflows with and without the country-specific change in trend growth. There is a wide range of estimates. A number like -34% in the case of Hungary suggests that the decline in trend growth in Hungary reduced investment inflows by about 34 percent compared to the counterfactual. Column (4) also illustrates why the impact of strong executive constraints through mean growth is fairly small on average. A similar number of countries have positive and negative experiences with some seeing improved and others

[44] We report results for a sub-set of countries that permanently adopted strong executive constraints in Table A7. This table uses the estimates in Table A6, column (4).

[45] If we run a linear OLS regression of actual and fitted FDI flows for both strong and weak executive constraints we get an adjusted R-squared of 0.67.

deteriorating growth after adopting strong executive constraints. On average, the mean effect of adoption is very close to zero which is in line with the reduced form effect. This heterogeneity is in line with the predictions of our theoretical model and suggests that there is heterogeneity in the performance of countries under weak and strong executive constraints.

Column (6) reports the implications of changes in the variance of growth, $\widehat{var}_{ct}$, by comparing columns (2) and (5). The counterfactual is now the adoption of strong executive constraints without a change in (expected) variance. The estimates are now uniformly positive, illustrating that the reduction in $\widehat{var}_{ct}$ led to an increase in investment inflows in all countries which adopted strong executive constraints in our data. In some countries the counterfactual suggests a very large impact of the variance reduction. For example, we predict that yearly gross investment flows into Poland would have been about 2 billion EUR less per year if strong executive constraints had not lowered the expected variance of productivity growth. According to our model, Turkey would have experienced a reduction of gross investment inflows by over 550 million EUR per year without the variance reduction. Many more countries from all regions of the world are estimated to have benefitted massively from the reduction of growth volatility.

Of course, it could easily be the case that forcing the effect of institutions to work through trend productivity growth and the volatility of productivity growth is limiting. However, one finding is that the model does a very decent job at predicting the magnitude of the average experience, it predicts an overall impact of a change from weak to strong executive constraints of around 90 percent in investment inflows which is similar in magnitude to what we found in the reduced-form approach.

The results in Table 7 illustrate the importance of understanding the range of experience from a change in institutions which depend, according to the mechanism under investigation here, on the specific performance in terms of the mean and volatility of productivity growth. The average effects from difference-in-difference masks the possibility that the benefits from institutional change are likely to be country specific based on how average productivity and volatility change when institutional reforms take place.

5 Concluding Comments

Much of the literature on the importance of institutions is unspecific about the mechanism at work. Having observed a robust reduced-form relationship between investment inflows and strong executive constraints, we have suggested a political economy approach. The starting point is the observation that, while mean effects are equivocal, there is a robust link between strong executive constraints and reduced volatility in growth. This motivates an economic channel working through risk and investment incentives where capital is committed before productivity shocks are realized.

Nothing in our analysis *proves* that the mechanism by which institutions matter for investment is through changes in the profile of productivity growth. But we feel that there is value in specificity and moving beyond reduced-forms. In particular, there is the discipline of articulating and then specifying a model for empirical purposes. This gives insights into potential sources of heterogeneity. We have also shown the predictions from the economic model are close (on average) to the magnitudes suggested by the reduced-form correlations. This would be impossible to know without first specifying a model and estimating the quantitative magnitudes.

We have provided both an empirical method and a theoretical framework in which to study the impact of political risk on economic activity. Political risk in our framework is generated by the fact that political actors directly affect productivity growth which implies that political risk can be studied with growth data. We have shown that the resulting measures of risk are correlated with risk evaluations of market actors and investment behavior both from the Netherlands and the OECD more generally.

We have formulated a theory and an approach which does not differentiate between investment by foreign owned firms in a sector. Indeed, unless domestic firms are somehow insulated from policy-induced productivity shocks, the theory should apply equally well to domestic firms. The reason to focus on investment flows by foreign firms in our study comes from the fact that we have good data for Dutch multinationals for a range of countries which have reformed their political institutions over the relevant time period. It would be interesting in future to test the ideas developed here for domestic firms where we would expect similar considerations to emerge.

The results developed here offer a specific take on more general debates about the causes and consequences of political risk. Modern approaches to economic growth such as Aghion and Howitt (2006) have argued persuasively that the policy environment for growth is of first-order importance. An important role for political institutions can be to provide predictability in that policy environment for firms, reducing policy risk. The benefits of improving institutions then go beyond mean comparisons and suggest a role for the impact of institutions on volatility. While investment is only one window on the economic consequences of this, discussions of risk are paramount in such cases. But there is a wider set of concerns about how policy risk due to weak institutions can have economic consequences at the micro level and which merit further investigation.

References

[1] Acemoglu, Daron, Simon Johnson, James Robinson, and Yunyong Thaicharoen, [2003], "Institutional Causes, Macroeconomic Symptoms: Volatility, Crises and Growth," *Journal of Monetary Economics*, 50, 49-123.

[2] Acemoglu Daron, Simon Johnson and James Robinson, [2005], "Institutions as a Fundamental Cause of Long-Run Development" Chapter 6, ed. Aghion P, Durlauf S *Handbook of Economic Growth,* Oxford, Elsevier.

[3] Acemoglu Daron and James Robinson, [2012] *Why Nations Fail*, New York: Crown Publishers.

[4] Aghion, Philippe and Peter Howitt, [2006], "Appropriate Growth Policy:A Unifying Framework," *Journal of the European Economic Association*, 4(2–3):269–314

[5] Aguiar, Mark and Gita Gopinath, [2007], "Emerging Market Business Cycles: The Cycle Is the Trend," *Journal of Political Economy*, 115 (1), 69-102.

[6] 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.

[7] Almeida, Heitor and Daniel Ferraira, [2002], "Democracy and the Variability of Economic Performance," *Economics and Politics*, 14(3), 225-257.

[8] Baker, Scott, Nicholas Bloom, and Steven J. Davis, [2015] "Measuring Economic Policy Uncertainty," NBER Working Paper 21633.

[9] Barro, Robert J., [1973], "The Control of Politicians: An Economic Model," *Public Choice*, 14, 19-42.

[10] Barro, Robert J., [1996], "Democracy and Growth," *Journal of Economic Growth,* 1(1), 1–27.

[11] Besley, Timothy, [2006], *Principled Agents? The Political Economy of Good Government*, The Lindahl Lectures, Oxford: Oxford University Press.

[12] Besley, Timothy and Hannes Mueller, [2014], "Uncertainty and Political Institutions: Theory and Application to Economic Growth," unpublished typescript.

[13] Besley Timothy and Torsten Persson, [2011], *Pillars of Prosperity: The Political Economics of Development Clusters*, Princeton: Princeton University Press.

[14] Brunetti, Aymo, and Beatrice Weder, [1998], "Investment and Institutional Uncertainty: A Comparative Study of Different Uncertainty Measures," Weltwirtschaftliches Archiv, 134 (3), 513-533.

[15] Buera, Francisco J. , Alexander Monge-Naranjo and Giorgio E. Primiceri, [2011], "Learning the Wealth of Nations," *Econometrica*, 79 (1), 1–45.

[16] Busse, Matthias (2004), "Transnational Corporations and Repression of Political Rights and Civil Liberties: An Empirical Analysis," *Kyklos*, 57(1), 45-66.

[17] Calvo, Guillermo, [1998], "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops", *Journal of Applied Economics*, 1, 35-53.

[18] Cameron, Colin and Pravin K. Trivedi, [2013], *Regression Analysis of Count Data*, 2nd edition, Econometric Society Monograph No.53, Cambridge University Press, 2nd Edition.

[19] Desai, Raj M. and Anders Olofsgaard, [2011], "The Costs of Political Influence: Firm-Level Evidence From Developing Countries," *Quarterly Journal of Political Science*, 6, 137-178.

[20] Egger, Peter and Hannes Winner, [2005], "Evidence on Corruption as an Incentive for Foreign Direct Investment," *European Journal of Political Economy*, 21(4), 932–952.

[21] Faccio, Mara, [2006], "Politically Connected Firms", *American Economic Review*, 96 (1).

[22] Ferejohn, John, [1986], "Incumbent Performance and Electoral Control", *Public Choice*, 50, 5-25.

[23] Fisman, Raymond. "Estimating the Value of Political Connections." *American Economic Review*, 91(4), 1095–1102.

[24] Frome, E.L., [1983],"The Analysis of Rates Using Poisson Regression Models," *Biometrics*, 39, 665-674.

[25] Glaeser, Edward, Giacomo Ponzetto and Andrei Shleifer, [2007], "Why does democracy need education?," *Journal of Economic Growth*, Springer, 12(2), 77-99.

[26] Gourio, François, Michael Siemer and Adrien Verdelhan, [2015], "Uncertainty and International Capital Flows," unpublished manuscript.

[27] Handley, Kyle and Nuno Limão, [2015] "Trade and Investment under Policy Uncertainty: Theory and Firm Evidence," *American Economic Journal: Economic Policy*, 7(4): 189–222.

[28] Harms, Philipp and Heinrich Ursprung [2002] "Do Civil and Political Repression Really Boost Foreign Direct Investments?," Economic Inquiry, 40 (4), 651-63.

[29] Harms, Philipp, [2002], "Political Risk and Equity Investment in Developing Countries," *Applied Economics Letters*, 9(6), 377-380

[30] Jensen, Nathan, [2008], "Political Risk, Democratic Institutions, and Foreign Direct Investment," *Journal of Politics*, 70 (4), 1040-1052.

[31] Jensen, Nathan [2003], "Democratic Governance and Multinational Corporations: Political Regimes and Inflows of Foreign Direct Investment," International Organization, 57 (3), 587-616.

[32] Kesternich, Iris and Monika Schnitzer, [2010], "Who is afraid of political risk? Multinational firms and their choice of capital structure," *Journal of International Economics*, 82, 208-218.

[33] Koren, Miklós and Silvana Tenreyro, [2007], "Volatility and Development." *Quarterly Journal of Economics*, 122 (1), 243-287.

[34] Lee, Jeong-Yeon, and Edwin Mansfield, [1996], "Intellectual Property Protection and U.S. Foreign Direct Investment", *Review of Economics and Statistics*, 78(2), 181-186.

[35] Li, Quan and Adam Resnick, [2003], "Reversal of Fortunes: Democratic Institutions and Foreign Direct Investment Inflows to Developing Countries," *International Organization*, 57 (1), 175-211.

[36] Lucas, Robert E., [1978], "On the Size Distribution of Business Firms," *The Bell Journal of Economics*, 9(2), 508-523.

[37] MIGA, [2014], "World Investment and Political Risk," Multilateral Investment Guarantee Agency report.

[38] Mobarak, Ahmed Mushfiq, [2005], "Democracy Volatility and Economic Development," *The Review of Economics and Statistics*, 87(2): 348–361.

[39] North, Douglass, [1990], *Institutions, Institutional Change and Economic Performance*, Cambridge: Cambridge University Press.

[40] North, Douglass, and R. Thomas [1973], *The Rise of the Western World: A New Economic History*, New York: Cambridge University Press.

[41] Nunn, Nathan, [2007], "Relationship-Specificity, Incomplete Contracts and the Pattern of Trade," *Quarterly Journal of Economics*, 122(2), 569-600.

[42] Nunn, Nathan and Daniel Trefler, [forthcoming], "Domestic Institutions as a Source of Comparative Advantage," *Handbook of International Economics*, Volume 4.

[43] Papaioannou, Elias, [2009], "What Drives International Financial Flows? Politics, Institutions and other Determinants," *Journal of Development Economics*, 88: 269-281.

[44] Papaioannou, Elias, and Gregorios Siourounis, [2008], "Democratization and Growth," *Economic Journal*, 118, 1520-1551.

[45] Persson, Torsten and Guido Tabellini, [2009a], "The growth effects of democracy: Is it heterogenous and how can it be estimated?", in Elhanan Helpman (ed) *Institutions and Economic Performance*, Cambridge: Harvard University Press.

[46] Persson, Torsten and Guido Tabellini, [2009b], "Democratic Capital: The Nexus of Economic and Political Change", *American Economic Journal Macroeconomics*, vol 1, 88-126.

[47] Przeworski, Adam, and Fernando Limongi, [1993], "Political Regimes and Economic Growth," *Journal of Economic Perspectives*, *7*(3), 51-69.

[48] Poelhekke, Steven, [2015], "Do global banks facilitate foreign direct investment?," *European Economic Review*, 76.

[49] Rodrik, Dani, [1991], "Policy uncertainty and private investment in developing countries," *Journal of Development Economics*, 36(2), 229-242.

[50] Silva, Santos and Silvana Tenreyro, [2006], "The Log of Gravity," *Review of Economics and Statistics*, 88(4), 641-658.

[51] Tsebelis, George, [2002], *Veto Players: How Political Institutions Work*, New York and Princeton, NJ: Russell Sage Foundation and Princeton University Press.

[52] Weede, Erich, [1996], "Political Regime Type and Variation in Economic Growth Rates," *Constitutional Political Economy*, 7, 167-176.

[53] Wei, Shang-Jin , [2000], "How Taxing is Corruption on International Investors?," *Review of Economics and Statistics*, 2000, 82(1), 1-11.

[54] Wooldridge, Jeffrey, [1999], "Distribution-free Estimation of Some Nonlinear Panel Data Models," *Journal of Econometrics*, 90(1), 77-97.

A The Economic Model

A firm in sector i chooses labor demand, L_{it}, to maximize

$$\left[(\Gamma_t \rho_i L_{it})^{\alpha} K_{it}^{1-\alpha}\right]^{\eta} - wL_{it}.$$

We can use the resulting labor demand functions to solve for the equilibrium wage. Substituting this back and summing we have that aggregate output is

$$Y_t = [\Gamma_t L]^{\alpha\eta} \left(\hat{K}_t\right)$$

where

$$\hat{K}_t = \left(\sum \pi_i \rho_i^{\frac{\alpha\eta}{1-\alpha\eta}} K_{it}^{\frac{[1-\alpha]\eta}{1-\alpha\eta}}\right)^{1-\alpha\eta}$$

is a productivity weighted average of the capital stock by all sectors in the economy. The profit function of a representative firm in sector i is therefore:

$$\Pi\left(\rho_i, \Gamma_t, K_{it} : \hat{K}_t\right) = (1-\alpha\eta)\, \rho_i^{\frac{\alpha\eta}{1-\eta\alpha}} K_{it}^{\frac{[1-\alpha]\eta}{1-\eta\alpha}} [\Gamma_t L]^{\alpha\eta} \left[\hat{K}_t\right]^{-\frac{\alpha\eta}{1-\eta\alpha}}.$$

Since aggregate capital affects the wage it also affects the incentive of any firm to invest. We assume a rational expectations competitive equilibrium where firms maximize profits taking aggregate capital $\hat{K}_t$ as given. This assumes firms act as if they can affect the aggregate level of capital in the economy. We then solve for a fixed point to obtain an expression for aggregate output.

Using this approach, K_{it} maximizes

$$E\left[\Pi\left(\rho_i, \Gamma_t, K_{it} : \hat{K}_t\right)\right] - rK_{it}$$

with expectations taken with respect to ε_t which is unknown when capital is installed.

We first derive the formula for the profit maximizing capital stock. The representative form in sector i chooses its labor demand to maximize

$$\left[(\Gamma_t \rho_i L_{it})^{\alpha} K_{it}^{1-\alpha}\right]^{\eta} - w_t L_{it}$$

This yields

$$L_{it} = Y_{it} \frac{\alpha\eta}{w_t}$$

so that in the aggregate it needs to hold that

$$w_t = Y_t \frac{\alpha\eta}{L}.$$

Plugging L_{it} into the firm's production function

$$Y_{it} = [\Gamma_t \rho_i]^{\alpha\eta} \left[\frac{\alpha\eta Y_{it}}{w_t}\right]^{\alpha\eta} K_{it}^{(1-\alpha)\eta} = [\Gamma_t \rho_i]^{\frac{\alpha\eta}{1-\alpha\eta}} \left[\frac{\alpha\eta}{w_t}\right]^{\frac{\alpha\eta}{1-\alpha\eta}} K_{it}^{\frac{(1-\alpha)\eta}{1-\alpha\eta}}$$

and plugging in w_t implies for aggregate output

$$Y_t = (\Gamma_t L)^{\alpha\eta} \left(\sum \pi_i \rho_i^{\frac{\alpha\eta}{1-\alpha\eta}} K_{it}^{\frac{(1-\alpha)\eta}{1-\alpha\eta}} \right)^{1-\alpha\eta}$$

so if we define

$$\hat{K}_t \equiv \left(\sum \pi_i \rho_i^{\frac{\alpha\eta}{1-\alpha\eta}} K_{it}^{\frac{(1-\alpha)\eta}{1-\alpha\eta}} \right)^{1-\alpha\eta}$$

aggregate output can be written

$$Y_t = [\Gamma_t L]^{\alpha\eta} \left(\hat{K}_t \right)$$

and plugging this back into the firm-level production function

$$Y_{it} = (\Gamma_t L)^{\alpha\eta} \rho_i^{\frac{\alpha\eta}{1-\alpha\eta}} \left(\hat{K}_t \right)^{-\frac{\alpha\eta}{1-\alpha\eta}} K_{it}^{\frac{(1-\alpha)\eta}{1-\alpha\eta}}$$

using the above equation, the firm-level expected profit function is

$$(1-\alpha\eta) EY_{it} - rK_{it} = (1-\alpha\eta) E\left[(\Gamma_t)^{\alpha\eta}\right] (L)^{\alpha\eta} \rho_i^{\frac{\alpha\eta}{1-\alpha\eta}} \left(\hat{K}_t \right)^{-\frac{\alpha\eta}{1-\alpha\eta}} K_{it}^{\frac{(1-\alpha)\eta}{1-\alpha\eta}} - rK_{it}$$

so that the first order condition for choice of capital is

$$(1-\alpha)\eta E\left[(\Gamma_t)^{\alpha\eta}\right] L^{\alpha\eta} \rho_i^{\frac{\alpha\eta}{1-\alpha\eta}} K_{it}^{\frac{[1-\alpha]\eta}{1-\alpha\eta}-1} \left(\hat{K}_t \right)^{-\frac{\alpha\eta}{1-\alpha\eta}} = r$$

which implies that the capital stock follows expected output according to

$$K_{it} = (1-\alpha)\eta \frac{E[Y_{it}]}{r}.$$

Now to complete the solution. Note that expected firm-level output is

$$\begin{aligned} E[Y_{it}] &= E\left[(\Gamma_t)^{\alpha\eta}\right] \rho_i^{\frac{\alpha\eta}{1-\alpha\eta}} \left[[1-\alpha]\eta \frac{E[Y_{it}]}{r} \right]^{\frac{(1-\alpha)\eta}{1-\eta\alpha}} [L]^{\alpha\eta} \left(\hat{K}_t \right)^{-\frac{\alpha\eta}{1-\alpha\eta}} \\ &= E\left[(\Gamma_t)^{\alpha\eta}\right] \rho_i^{\frac{\alpha\eta}{1-\eta}} \left[\frac{(1-\alpha)\eta}{r} \right]^{\frac{(1-\alpha)\eta}{1-\eta}} [L]^{\frac{\alpha\eta(1-\alpha\eta)}{1-\eta}} \left(\hat{K}_t \right)^{-\frac{\alpha\eta}{1-\eta}}. \end{aligned}$$

We now use this to solve for $\hat{K}_t$.

$$\begin{aligned} \hat{K}_t &= \left[\frac{(1-\alpha)\eta}{r} \right]^{[1-\alpha]\eta} \left(\sum \pi_i \rho_i^{\frac{\alpha\eta}{1-\alpha\eta}} \left(E[Y_{it}] \right)^{\frac{[1-\alpha]\eta}{1-\alpha\eta}} \right)^{1-\alpha\eta} \\ &= \left[\frac{(1-\alpha)\eta}{r} \right]^{\frac{([1-\alpha]\eta)(1-\alpha\eta)}{1-\eta+[1-\alpha]\alpha\eta^2}} \left(\sum \pi_i \rho_i^{\frac{\alpha\eta}{(1-\eta)}} \right)^{\frac{(1-\eta)(1-\alpha\eta)}{1-\eta+[1-\alpha]\alpha\eta^2}} [L]^{\frac{\alpha\eta(1-\alpha\eta)[1-\alpha]\eta}{1-\eta+[1-\alpha]\alpha\eta^2}} \left(E\left[(\Gamma_t)^{\alpha\eta}\right] \right)^{\frac{(1-\eta)[1-\alpha]\eta}{1-\eta+[1-\alpha]\alpha\eta^2}}. \end{aligned}$$

Inserting this back into the output equation implies that per capita output moves according to

$$y_t = B [\Gamma_t]^{\alpha\eta} \left(E\left[(\Gamma_t)^{\alpha\eta}\right] \right)^{\frac{(1-\eta)[1-\alpha]\eta}{1-\eta+[1-\alpha]\alpha\eta^2}}.$$

B Proofs of Propositions

Proof of Proposition 1: The variance of ε_t with strong executive constraints variance can be written as:

$$\lambda(1-\lambda)\left[(1-\beta_H)\Delta_H-(1+\beta_L)\Delta_L\right]^2+\sigma_\omega^2$$

where

$$\beta_H=\left(\frac{\Delta_H-\Delta_0}{\Delta_H}\right)\phi_H \text{ and } \beta_L=\left(\frac{\Delta_0-\Delta_L}{\Delta_L}\right)\phi_L.$$

This variance is lower than under weak executive constraints since:

$$\Delta_H-\Delta_L>(1-\beta_H)\Delta_H-(1+\beta_L)\Delta_L$$

as claimed. ■

Proof of Proposition 2: Using the results above, we know that the firm level capital stock is given by:

$$\begin{aligned}
K_{it} &= \frac{[1-\alpha]\eta}{r}E\left[(\Gamma_t)^{\alpha\eta}\right]\rho_i^{\frac{\alpha\eta}{1-\eta}}\left[\frac{(1-\alpha)\eta}{r}\right]^{\frac{[1-\alpha]\eta}{1-\eta}}[L]^{\frac{\alpha\eta(1-\alpha\eta)}{1-\eta}} \\
&\times\left(\left[\frac{(1-\alpha)\eta}{r}\right]^{\frac{([1-\alpha]\eta)(1-\alpha\eta)}{1-\eta+[1-\alpha]\alpha\eta^2}}\left(\sum\pi_i\rho_i^{\frac{\alpha\eta}{(1-\eta)}}\right)^{\frac{(1-\eta)(1-\alpha\eta)}{1-\eta+[1-\alpha]\alpha\eta^2}}[L]^{\frac{\alpha\eta(1-\alpha\eta)[1-\alpha]\eta}{1-\eta+[1-\alpha]\alpha\eta^2}}\left(E\left[(\Gamma_t)^{\alpha\eta}\right]\right)^{\frac{(1-\eta)(1-\alpha)\eta}{1-\eta+[1-\alpha]\alpha\eta^2}}\right)^{-\frac{\alpha\eta}{1-\eta}}.
\end{aligned}$$

Gathering terms related to $E\left[(\Gamma_t)^{\alpha\eta}\right]$ and labelling the remaining terms C_i, this becomes

$$K_{it}=C_i\times\left(E\left[(\Gamma_t)^{\alpha\eta}\right]\right)^{\frac{1-\eta}{1-\eta+[1-\alpha]\alpha\eta^2}}$$

Now using the fact that

$$E\left((\Gamma_t)^{\alpha\eta}\right)=e^{-\frac{[1-\alpha\eta]\alpha\eta}{2}\sigma_\varepsilon^2}\left(\Gamma_{t-1}\right)^{\alpha\eta}e^{\alpha\eta\kappa}$$

we obtain the following expression for the optimal capital stock of a representative firm i

$$\begin{aligned}
\ln K_{it}^* &= \ln C_i-\frac{(1-\alpha\eta)\alpha\eta(1-\eta)}{2(1-\eta+(1-\alpha)\alpha\eta^2)}\sigma_\varepsilon^2 \\
&+\frac{\alpha\eta(1-\eta)}{1-\eta+(1-\alpha)\alpha\eta^2}\kappa+\ln\left((\Gamma_{t-1})^{\alpha\eta}\right)^{\frac{1-\eta}{1-\eta+[1-\alpha]\alpha\eta^2}}
\end{aligned}$$

which implies immediately that the optimal capital stock is increasing in κ and decreasing in σ_ε^2 as claimed.
■

C Productivity Growth and GDP per Capita Growth

In order to get an expression for mean growth we insert

$$\begin{aligned} E\left((\Gamma_t)^{\alpha\eta}\right) &= e^{-\frac{[1-\alpha\eta]\alpha\eta}{2}\sigma_\varepsilon^2}\left(\Gamma_{t-1}\right)^{\alpha\eta} e^{\alpha\eta\kappa} \\ \Gamma_t &= \Gamma_{t-1}e^{\kappa}e^{\varepsilon_t} \end{aligned}$$

into the equation for y_t to get

$$\begin{aligned} y_t &= B\left[\Gamma_{t-1}e^{\kappa}e^{\varepsilon_t}\right]^{\alpha\eta}\left[e^{-\frac{[1-\alpha\eta]\alpha\eta}{2}\sigma_\varepsilon^2}\left(\Gamma_{t-1}\right)^{\alpha\eta} e^{\alpha\eta\mu}\right]^{\frac{(1-\alpha\eta)(1-\alpha)\eta}{1-\eta+\alpha(1-\alpha)\eta^2}} \\ \ln y_t &= \ln B + \beta\ln\left(\Gamma_{t-1}\right) + \beta\kappa + \alpha\eta\varepsilon_t - \beta\frac{(1-\alpha\eta)(1-\alpha)\eta}{2}\sigma_\varepsilon^2 \end{aligned}$$

with $\beta = \frac{\alpha\eta}{1-\eta+\alpha\eta}$ so that mean growth is

$$\mu_g = E\left(\ln y_t - \ln y_{t-1}\right) = \beta\kappa - \frac{\alpha\eta}{2}\sigma_\varepsilon^2 - \beta\frac{(1-\alpha\eta)(1-\alpha)\eta}{2}\sigma_\varepsilon^2 \tag{13}$$

which we can combine with

$$\sigma_g^2 = (\alpha\eta)^2\sigma_\varepsilon^2$$

to solve for trend productivity growth $\hat{\kappa}(\delta)$ as

$$\begin{aligned} \hat{\kappa}(\delta) &= \frac{1}{\beta}\hat{\mu}_g + \frac{\alpha\eta}{\beta 2}\hat{\sigma}_\varepsilon^2 + \frac{(1-\alpha\eta)(1-\alpha)\eta}{2}\hat{\sigma}_\varepsilon^2 \\ &= \frac{1}{\beta}\hat{\mu}_g + \frac{1-\eta+\alpha\eta}{2}\hat{\sigma}_\varepsilon^2 + \frac{(1-\alpha\eta)(1-\alpha)\eta}{2}\hat{\sigma}_\varepsilon^2 \end{aligned}$$

or

$$\hat{\kappa}(\delta) = \frac{1-\eta+\alpha\eta}{\alpha\eta}\hat{\mu}_g(\delta) + \frac{1-\alpha\eta^2+\alpha^2\eta^2}{2(\alpha\eta)^2}\hat{\sigma}_g^2(\delta) \tag{14}$$

and

$$\hat{\sigma}_\varepsilon^2(\delta) = \left(\frac{\hat{\sigma}_g(\delta)}{\alpha\eta}\right)^2. \tag{15}$$

D Data Description

D.1 Political Institutions

Summary statistics are in Table A0. The data on political institutions come from the Polity IV data base whose manual is available at http://www.systemicpeace.org/inscr/p4manualv2010.pdf from which the following descriptions are taken.

The executive constraints variable that we use is *xconst* available on a seven point scale. The manual explains the variable's construction as follows:

> "Operationally, this variable refers to the extent of institutionalized constraints on the decision making powers of chief executives, whether individuals or collectivities. Such limitations may be imposed by any "accountability groups." In Western democracies these are usually legislatures. Other kinds of accountability groups are the ruling party in a one-party state; councils of nobles or powerful advisors in monarchies; the military in coup-prone polities; and in many states a strong, independent judiciary. The concern is therefore with the checks and balances between the various parts of the decision-making process."

There is a value of one where there is unlimited authority in which there are no regular limitations on the executive's actions (as distinct from irregular limitations such as the threat or actuality of coups and assassinations) and category seven is executive parity or subordination where accountability groups have effective authority equal to or greater than the executive in most areas of activity. Appendix Figure A1 shows the share of countries with a score of xconst equal to 7. The share went from around 0.25 in the 1980s to over 0.35 in 2010.

Openness of executive recruitment is the variable *xropen* which is intended to capture the extent to which the politically active population has an opportunity to attain the position through a regularized process. This is on a four point scale. At one extreme a value of one denotes the most closed possibility where chief executives are determined by hereditary succession and includes kings, emperors, beys, emirs, etc. A score of four (maximal openness) denotes the case where chief executives are chosen by elite designation, competitive election, or transitional arrangements that fall between designation and election.

Competitiveness of executive recruitment is the variable *xrcomp* which tries to capture the to which "prevailing modes of advancement give subordinates equal opportunities to become superordinates". The lowest score of one denotes the case where chief executives are determined by hereditary succession, designation, or by a combination of both, as in monarchies whose chief minister is chosen by king or court. The highest score of three goes to countries where chief executives are typically chosen in or through competitive elections matching two or more major parties or candidates.

D.2 Investment Inflows

Data comes from the Dutch central bank, De Nederlandsche Bank (DNB). The definition of Investment Inflows used by the Bank in this period comes from the IMF Best Practice Manual 5.0. According to this definition direct investments are transactions relating to movements in share capital by foreign-owned enterprises, i.e. equity participations which are conducted with a *lasting interest*. The *lasting interest* is defined through the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence by the investor on the management of the enterprise.

investment inflow in our data consists of three different investment inflow flows: equity capital, reinvested earnings and other capital flows. Debt and equity are reported directly by reporting agents. Reinvested earnings is calculated by the Dutch Central Bank as the difference between 'result' in financial year (which is reported) and dividend in financial year (which is also reported). Equity and reinvested earnings are both direct results of capital investments (shareholders' equity). Other capital contains all other intercompany flows, mainly loans.

A special feature of the Dutch data is that it contains regular entities and special purpose entities (SPEs). In fact, more than half the investment flows we observe in our sample of countries comes from SPEs. An SPE is a legal entity that is created to fulfill narrow, specific or temporary objectives. This serves two purposes. First, SPEs are used by companies to isolate the firm from financial risk. Normally a company will transfer assets to the SPE for management or use the SPE to finance a large project thereby achieving a narrow set of goals without putting the entire firm at risk. Secondly, SPEs are also used to hide debt (inflating profits), hide ownership, and obscure relationships between different entities which are in fact related to each other. In order to reduce the impact of the second motivation on our estimation we excluded tax havens and very small countries with less than 100,000 inhabitants.

We aggregate the data into sectors to avoid having too many zeros. We also run robustness checks with the largest 14 sectors which contain more than 99% of all the FDI conducted from the Netherlands.

We focus on gross inflows for most of this study as this generates a number which is either zero or strictly positive. In order to provide a sense of net inflows we also study positive net inflows. For this we calculate the net inflow and set it equal to 0 in country/sector/years in which it is negative. In addition, we study whether a country/sector had any inflow at all in a given year.

In order to be sure that our results are not driven by particularities of the Dutch data we gathered investment flow data on the country level from the OECD web page. Again we focus on gross flows into "partner" countries from all OECD countries and add across all OECD countries. We were able to match data for 158 countries between 1985 and 2012. We also used data from the UNCTAD FDI flows dataset which gives inflows in millions of dollars and comes from the UNCTAD World Investment Reports. We match data for 157 countries between 1983 and 2012. We always replace negative observations by zeros.

D.3 Other Data

D.3.1 Growth and GDP

Growth and real GDP data is from the Penn World Tables version 7.0 and is based on the rgdpl variable. Growth is the percentage points increase from one year to the next.

D.3.2 ONDD

Political risk is from the Belgian insurer Office National du Ducroire (ONDD). ONDD insures international transactions like credit and foreign direct investments against political risk like political violence or expropriation. Its insurance rates are linked to publicly available country ratings of political risk published on the ONDD web site. We use their numbers for short term and mid-term credit risks as these are available from 1994 till 2010. ONDD analysts meet four times a year to update the country risk ratings. Each country is reviewed at least once a year in one of the four quarterly meetings based on the country's geographic region. Countries that are not in the region under review can be added to the agenda in cases of political change that requires a reevaluation. Ratings go from 1 (low risk) to 7 (high risk). Columns (1) and (2) in Table 1 show that an increase of risk by one point corresponds to a decrease in foreign investment by around 10 percent. These categories are used to generate the prices charged for political risk insurance.

D.3.3 ICRG

Information on property rights protection is taken from the International Country Risk Guide. (ICRG) provided by the Political Risk Services (PRS) Group. Since 1984, PRS Group (2005a) has provided information on 12 risk indicators that address not only political risk but also various components of political institutions. We use their measure of risk of expropriation which is coded between 0 and 10 with higher scores implying better protection.

D.3.4 Political Connections

We use two measures for connected sectors. Our main measures is from Faccio (2006) who assembled a database of 20,202 publicly traded firms in 47 countries. A company is identified as being connected with a politician if at least one of its large shareholders (anyone controlling at least 10 percent of voting shares) or one of its top officers (CEO, president, vice-president, chairman, or secretary) is a member of parliament, a minister, or is closely related to a top politician or party. We mark a sector as connected if at least one firm in the sector is politically connected in a given country. We can match data for 32 countries and 19 sectors.

Our second measure of political connection comes from the World Enterprise surveys. The early survey waves asked plant managers in firms whether: *"How much influence do you think your firm actually had on recently enacted national laws and regulations that have a substantial impact on your business?"*. Each answer ranges from 0 (no impact) to 4 (decisive influence). We mark a sector as politically connected if at least one firm in the sector reports some influence (2-4) over political decisions. From this we get data for 33 countries and 10 sectors from the period 2002-2005. In the combined dataset we observe more than 20 countries which adopt strong executive constraints at some stage.

E Two Stage Procedure

In this section we describe a two-stage procedure for estimating the impact of strong executive constraints on foreign investment flows. In the first stage we predict the adoption of strong executive constraints through the share of neighboring countries that adopted strong executive constraints. The idea is based on Persson and Tabellini (2009b) that the adoption of democratic institutions in countries leads to a build-up of democratic capital in other countries. We use a linear fixed effects regression to produce fitted values of strong executive constraints. The results are reported in Table A8, column (1) and indicate that the probability of having strong executive constraints increases by 40 percentage points if all neighbours have also adopted it.

In Columns (2) to (5) we use the fitted value from this regression in regressions as in Table 1, Panel B. The identifying assumption now is that the adoption of strong executive constraints in neighboring countries does not affect foreign investment other than through the adoption decision. It is clear that the coefficient on strong executive constraints increases somewhat over the simple reduced form results. We now estimate that investment inflows more than double with the adoption of strong executive constraints. We also find much bigger effects for the diversification of the economy. Again the coefficients are smaller and less precisely estimated for the OECD and UNCTAD datasets.

Table 1: Executive Constraints and Foreign Investment

Panel A: Sector Level

VARIABLES	(1) Investment Inflow	(2) Investment Inflow	(3) Investment Inflow	(4) Investment Inflow	(5) Number of Industries with Inflows
strong executive constraints	0.881***	0.906***	0.827***	1.064***	0.296***
	(0.201)	(0.219)	(0.215)	(0.251)	(0.0472)
high openness		-0.0854			
		(0.219)			
high competitiveness		0.206			
		(0.219)			
GDP per capita (in logs)			-0.0200		
			(0.298)		
GDP per capita growth			-0.0280		
			(0.712)		
years of schooling				0.0186	
				(0.0665)	
country fixed effects	yes	yes	yes	yes	yes
exposure: total FDI flow	yes	yes	yes	yes	no
Observations	46,561	46,561	41,746	8,367	46,561
Number of country/sectors	1,778	1,778	1,742	1,457	1,778

Panel B: Country Level

VARIABLES	(1) Investment Inflow	(2) Investment Inflow	(3) Investment Inflow	(4) Investment Inflow	(5) Number of Industries with Inflows	(6) Investment Inflow (OECD)	(7) Investment Inflow (UNCTAD)
strong executive constraints	0.759**	0.806***	0.712**	0.935**	0.327***	0.499**	0.372***
	(0.300)	(0.307)	(0.319)	(0.368)	(0.0902)	(0.207)	(0.110)
high openness		-0.140					
		(0.160)					
high competitiveness		0.260					
		(0.322)					
GDP per capita			-0.0479				
			(0.346)				
			0.201				
			(0.898)				
years of schooling				0.00176			
				(0.0744)			
country fixed effects	yes	yes	yes	yes	yes	yes	yes
exposure: total FDI flow	yes	yes	yes	yes	no	yes	yes
Observations	4,451	4,451	3,947	790	4,451	4,362	4,485
Number of countries	156	156	155	132	156	158	157

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects poisson regression. Columns (1) to (4) and (6) use the exposure option. The exposure variable is the sum of foreign investment flows in the same year. Dependant variable in columns (1) to (4) is the gross investment inflow from the Netherlands into the country or country/sector. Column (5) uses the number of industries with a positive inflow. Dependant variable is the flow of investment from all OECD countries in column (6) and from all countries in column (7). Column (4) uses 5-year averages of the executive constraint variable for the five years around 1985, 1990, 1995, 2000, 2005 and 2010. All explanatory variables are lagged by one year except for in column (4).

Table 2: Political Connections and Investment Inflows

	(1)	(2)	(3)	(4)	(5)	(6)
		all sectors			largest 14 sectors	
VARIABLES	Investment Inflow	Investment Inflow	Investment Inflow	Investment Inflow	Investment Inflow	Investment Inflow
strong executive constraints * politically connected sector	0.439***	0.851*	0.439***	1.429***	0.978**	1.426***
	(0.151)	(0.454)	(0.149)	(0.167)	(0.397)	(0.164)
politically connected sector	-0.186	-0.494	-0.184	-1.141***	-1.401***	-1.147***
	(0.132)	(0.410)	(0.129)	(0.113)	(0.352)	(0.110)
country/year fixed effects	yes	yes	yes	yes	yes	yes
exposure: total sector FDI flow	yes	yes	yes	yes	yes	yes
Observations	13,229	4,906	17,030	11,593	4,252	14,845
Number of country/year effects	921	654	1,464	921	653	1,463

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects poisson regression. The exposure variable is the sum of foreign investment flows in the same sector and year. Dependant variable is the gross investment inflow from the Netherlands into the country/sector. Political connection in columns (1) and (4) is from Faccio (2006) and from the World Enterprise Survey in columns (2) and (5). Columns (3) and (6) combine both measures. In case of overlap we use the Faccio (2006) measure. Columns (4) to (6) restrict the sample to the largest 14 sectors. All explanatory variables are lagged by one year.

Table 3: Additional Results and Robustness

Panel A: Sector Level

	(1)	(2)	(3)	(4)	(5)
	Property Rights	Post Cold War	Time Dummies	Net Inflows	Share of Global Flows
VARIABLES	Investment Inflow	Investment Inflow	Investment Inflow	Investment Inflow	Share of Global Investment Flow
strong executive constraints	0.810***	0.797***	0.896***	0.701***	0.930***
	(0.201)	(0.259)	(0.202)	(0.224)	(0.254)
protection of property rights	0.217***				
	(0.0629)				
country/sector fixed effects	yes	yes	yes	yes	yes
exposure: total FDI flow	yes	yes	no	yes	no
year fixed effects	no	no	yes	no	no
Observations	13,492	34,769	46,561	45,134	46,561
Number of country/sectors	969	1,756	1,778	1,717	1,778

Panel B: Country Level

	(1)	(3)	(5)	(4)	(6)
VARIABLES	Investment Inflow	Investment Inflow	Investment Inflow	Investment Inflow	Share of Global Investment Flow
strong executive constraints	0.707***	0.631*	0.679**	0.549*	0.722**
	(0.264)	(0.365)	(0.300)	(0.287)	(0.289)
protection of property rights	0.268***				
	(0.0926)				
country fixed effects	yes	yes	yes	yes	yes
exposure: total FDI flow	yes	yes	no	yes	no
year fixed effects	no	no	yes	no	no
Observations	1,627	2,853	3,859	3,832	3,859
Number of countries	116	154	154	153	154

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects poisson regression. Dependant variable in columns (1) to (3) is the gross investment flows from the Netherlands into the country or country/sector. Dependant variable in column (4) is the net investment flow from the Netherlands conditional on the flow being positive. Dependant variable in column (5) is the share of global investment flows that goes into country or country/sector. All explanatory variables are lagged by one year. Column (2) uses only data after 1991.

Table 4: Executive Constraints and Growth (1970-2010)

Panel A: GDP per Capita Growth Data

Sample	Constraints	Obs	Mean	Variance
whole sample	strong executive constraints	1676	0.022	0.0019
	weak executive constraints	4002	0.019	0.0069
countries with at least five years in strong and weak executive constraints	strong executive constraints	534	0.023	0.0019
	weak executive constraints	811	0.021	0.0062

Panel B: Calculated Productivity Growth (assuming alpha=0.66 and eta=0.75)

Sample	Constraints	Obs	Mean	Variance
whole sample	strong executive constraints	1676	0.040	0.0076
	weak executive constraints	4002	0.046	0.0281
countries with at least five years in strong and weak executive constraints	strong executive constraints	534	0.042	0.0077
	weak executive constraints	811	0.047	0.0255

Notes: Units are country/years. Sample are all countries between 1970-2010. Growth is GDP per capita growth (not in percent).

Table 5: Political Credit Risk

	(1)	(2)	(3)	(4)	(5)
	Updating on World Data Alone	Updating on Country Data (D = 1000)	Updating on Country Data (D = 100)	Updating on Country Data (D = 10)	Updating on Country Data (D = 2)
VARIABLES	political risk	political risk	political risk	political risk	political risk
variance of productivity growth (estimated on world level)	0.611***				
	(0.125)				
mean productivity growth (estimated on world level)	-0.968***				
	(0.0801)				
variance of productivity growth (estimated on country level)		1.327***	0.967***	0.722***	0.442
		(0.348)	(0.250)	(0.260)	(0.327)
mean productivity growth (estimated on country level)		-1.276***	-0.955***	-0.916***	-1.047***
		(0.349)	(0.258)	(0.247)	(0.259)
Country fixed effects	yes	yes	yes	yes	yes
Observations	556	556	556	556	556
Whithin adj. R-Squared	0.523	0.107	0.160	0.232	0.245
Number of countries	33	33	33	33	33

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects OLS regression. Dependant variable is the political credit risk rating from ONDD. Risk measures the credit default risk in the short term (less than 1 year). The sample is restricted to countries that changed level of executive constraints between high and low executive constraints once and excludes the Lebanon. "D=1000" means that the prior is given a weight equivalent to 1000 country/year observations. This implies that the growth history of the country receives very little weight. "D=2" means that the prior is given a weight equivalent to 2 country/year observation. This gives most weight to the country-specific history. We set beta=0.66 and eta=0.75.

Table 6: Instpecting the Mechanism

Panel A: Sector Level

	(1)	(2)	(3)	(4)	(5)
	Updating on World Data Alone	Updating on Country Data (D = 1000)	Updating on Country Data (D = 100)	Updating on Country Data (D = 10)	Updating on Country Data (D = 2)
VARIABLES	Investment Inflow	Investment Inflow	Investment Inflow	Investment Inflow	Investment Inflow
variance of productivity growth (estimated on world level)	-0.320**				
	(0.127)				
mean productivity growth (estimated on world level)	0.0835				
	(0.0843)				
variance of productivity growth (estimated on country level)		-0.970***	-0.935***	-0.873***	-0.572**
		(0.339)	(0.174)	(0.218)	(0.235)
mean productivity growth (estimated on country level)		0.613**	0.548***	0.273**	0.370**
		(0.305)	(0.148)	(0.121)	(0.148)
country/sector fixed effects	yes	yes	yes	yes	yes
control of total FDI flow	yes	yes	yes	yes	yes
Observations	9,977	9,949	9,949	9,949	9,949
Number of countrysectorid	408	408	408	408	408

Panel B: Country Level

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Investment Inflow	Investment Inflow	Investment Inflow	Investment Inflow	Investment Inflow
variance of productivity growth (estimated on world level)	-0.259				
	(0.179)				
mean productivity growth (estimated on world level)	0.0722				
	(0.116)				
variance of productivity growth (estimated on country level)		-0.849**	-0.897***	-0.765**	-0.422
		(0.419)	(0.236)	(0.305)	(0.307)
mean productivity growth (estimated on country level)		0.569	0.593***	0.360***	0.499***
		(0.355)	(0.162)	(0.103)	(0.167)
country fixed effects	yes	yes	yes	yes	yes
control of total FDI flow	yes	yes	yes	yes	yes
Observations	903	901	901	901	901
Number of countries	33	33	33	33	33

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects poisson regression. Dependant variable is the total investment flows that year (in that sector) that goes into country. All explanatory variables are lagged by one year and weighted by their standard deviations. The sample is restricted to countries that changed level of executive constraints between high and low executive constraints once and excludes the Lebanon. "D=1000" means that the prior is given a weight equivalent to 1000 country/year observations. This implies that the growth history of the country receives very little weight. "D=2" means that the prior is given a weight equivalent to 2 country/year observation. This gives most weight to the country-specific history. We set beta=0.66 and eta=0.75.

Table 7: Counterfactual FDI Flows

	(1)	(2)	(3)	(4)	(5)	(6)
			adoption of strong constraints without change in mean productivity growth		adoption of strong constraints without change in variance of productivity growth	
		(I)	(II)	ln(II)-ln(I)	(III)	ln(III)-ln(I)
country	mean yearly investment inflows	fitted value of investment inflows	simulated fitted value of investment inflows	effect of change in mean on inflow	simulated fitted value of investment inflows	effect of change in variance on inflow
Albania	82980	64320	36677	**56%**	33173	**66%**
Argentina	278610	223395	225129	**-1%**	165844	**30%**
Bolivia	90527	72780	102538	**-34%**	40221	**59%**
Botswana	11054	11910	29709	**-91%**	2503	**156%**
Bulgaria	331913	317574	638109	**-70%**	288783	**10%**
Chile	595607	582200	329030	**57%**	128822	**151%**
Colombia	240063	93655	98040	**-5%**	81943	**13%**
Croatia	586638	785206	404795	**66%**	69242	**243%**
Ecuador	70398	90620	177124	**-67%**	46741	**66%**
Greece	1028152	968231	1138165	**-16%**	391941	**90%**
Haiti	2494	2727	2679	**2%**	1868	**38%**
Hungary	2286080	2316503	3255817	**-34%**	1606815	**37%**
Kenya	129095	127082	111318	**13%**	104406	**20%**
Lesotho	1432	1404	1466	**-4%**	163	**215%**
Madagascar	13450	3783	2925	**26%**	2699	**34%**
Mongolia	461	34001	49825	**-38%**	26880	**24%**
Nicaragua	11384	12192	11031	**10%**	389	**345%**
Niger	47	26236	19569	**29%**	9164	**105%**
Pakistan	24821	24712	26383	**-7%**	15875	**44%**
Paraguay	25073	25122	47593	**-64%**	12720	**68%**
Peru	147877	249825	198214	**23%**	107722	**84%**
Philippines	15319	147447	141430	**4%**	100028	**39%**
Poland	3718198	3520999	2751511	**25%**	1523596	**84%**
Romania	3310134	3053268	3132063	**-3%**	1412994	**77%**
Serbia and Montenegro	40006	73012	31422	**84%**	2834	**325%**
Slovakia	1189883	1217437	1220111	**0%**	329619	**131%**
South Africa	1263382	1263252	1408699	**-11%**	272298	**153%**
Sudan	77	8940	7661	**15%**	4181	**76%**
Taiwan	1503860	1399743	2667963	**-65%**	939890	**40%**
Thailand	607636	442438	681600	**-43%**	347697	**24%**
Turkey	1411081	1385370	1419717	**-2%**	813665	**53%**
Uruguay	195777	194477	148615	**27%**	85017	**83%**
			AVERAGE:	**-4%**	AVERAGE:	**93%**

Notes: All inflows are average yearly inflows during strong executive constraints (in 1000 EUR). "mean yearly inflows" is the actualy average yearly inflow of investment into the country. "fitted value of investment inflows" is the fitted value from Table 5, Column (4), Panel B. "simulated fitted value of investment inflows" replaces the mean (in (II)) and the variance (in (III)) in the episode with strong executive constraints with the average mean and variance in the episode with weak executive constraints. The difference between (I) and (II) ((III) respecitvely) captures the effect of changes in the expected mean (variance) on investment inflows in the model. Values are not calculated for Nigeria as the country only has one year under strong executive constraints.

Table A0: Summary Statistics

Sample for Reduced Form (1983-2012)

Variable	Obs	Mean	Std. Dev.	Min	Max
FDI inflow	47001	389369	4548976	0	236000000
Number of Industries with Inflows	47001	0.455	0.498	0	1
strong executive constraints (executive constraints=7)	47001	0.380	0.485	0	1
real GDP per capita	42002	8.707	1.303	5.080	11.823
real GDP per capita growth	41389	0.022	0.067	-0.646	1.154
politically connected sector (Faccio (2006))	14198	0.254	0.435	0	1
politically connected sector (Enterprise Surveys)	10850	0.542	0.498	0	1

Sample for Mechanism Section (1983-2010, Only Countries that Switched)

Variable	Obs	Mean	Std. Dev.	Min	Max
FDI inflow	10115	45739	266262	0	8468053
world level estimates					
variance of productivity growth (estimated on world level)	9708	0.0178	0.0108	0.0073	0.0346
mean productivity growth (estimated on world level)	9708	0.0344	0.0035	0.0283	0.0417
country estimates, D=2					
variance of productivity growth (estimated on country level)	9694	0.0123	0.0127	0.0021	0.1087
mean productivity growth (estimated on country level)	9694	0.0329	0.0319	-0.1532	0.1354
country estimates, D=10					
variance of productivity growth (estimated on country level)	9694	0.0137	0.0097	0.0042	0.0765
mean productivity growth (estimated on country level)	9694	0.0338	0.0198	-0.0310	0.1112
country estimates, D=100					
variance of productivity growth (estimated on country level)	9694	0.0162	0.0086	0.0072	0.0339
mean productivity growth (estimated on country level)	9694	0.0357	0.0068	0.0247	0.0601
country estimates, D=1000					
variance of productivity growth (estimated on country level)	9694	0.0170	0.0092	0.0075	0.0277
mean productivity growth (estimated on country level)	9694	0.0364	0.0057	0.0283	0.0449

Table A1: Dynamic View Around the Adoption Date

VARIABLES	(1) FDI Inflow	(2) FDI Inflow
strong executive constraints		0.851***
		(0.240)
4 years before switch	-0.559	-0.186
	(0.376)	(0.284)
3 years before switch	-1.101***	-0.690*
	(0.296)	(0.365)
2 years before switch	-0.823***	-0.311
	(0.237)	(0.223)
1 year before switch	-0.764***	-0.204
	(0.179)	(0.236)
year of switch	-0.811***	-1.088***
	(0.202)	(0.195)
1 year after switch	0.138	-0.119
	(0.364)	(0.310)
2 years after switch	-0.101	-0.354**
	(0.198)	(0.168)
3 years after switch	-0.140	-0.384**
	(0.141)	(0.162)
4 years after switch	-0.0987	-0.339
	(0.184)	(0.210)
country/sector fixed effects	yes	yes
exposure: total FDI flow	yes	yes
Observations	31,973	31,973
Number of countrysectorid	1,530	1,530

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Specification as in Table 1, column (1).Columns (1) and (2) study the adoption of strong executive constraints.

Table A2: Political Credit Risk and Executive Constraints

VARIABLES	(1) mid-term political risk (ONDD)	(2) short-term political risk (ONDD)	(3) protection of property rights	(4) mid-term political risk (ONDD)	(5) short-term political risk (ONDD)	(6) protection of property rights
strong executive constraints	-1.997***	-1.687***	1.702***	-0.430***	-0.827***	1.338***
	(0.0776)	(0.0739)	(0.105)	(0.127)	(0.252)	(0.385)
country fixed effects	no	no	no	yes	yes	yes
Observations	2,524	2,540	1,627	2,524	2,540	1,627
R-squared	0.213	0.168	0.140	0.023	0.025	0.045
Number of countryid	151	151	116	151	151	116

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. "mid-term" political risk is the credit risk rating for a time horizon of more than one year. "short-term" political risk is the credit risk rating for a time horizon of less than one year. "protection of property rights" is the ICRG ranking.

Table A3: Effect of Covariance with Mean Growth

	(1)	(2)	(3)
	World mean growth	OECD mean growth	Netherlands growth
VARIABLES	FDI Inflow	FDI Inflow	FDI Inflow
covariance of productivity growth with respective mean	0.0714	0.0168	-0.0629
	(0.0891)	(0.0544)	(0.0798)
variance of productivity growth (estimated on country level)	-0.863***	-0.867***	-0.851***
	(0.214)	(0.221)	(0.221)
mean productivity growth (estimated on country level)	0.253**	0.273**	0.272**
	(0.114)	(0.121)	(0.121)
country/sector fixed effects	yes	yes	yes
control of total FDI flow	yes	yes	yes
Observations	9,877	9,877	9,877
Number of countrysectorid	408	408	408

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects Poisson regression. Dependant variable is the total FDI flows that year (in that sector) that goes into country. All explanatory variables are lagged by one year and weighted by their standard deviations. The sample is restricted to countries that changed level of executive constraints between high and low executive constraints once and excludes the Lebanon. Columns (4) to (6) assume "D=10". We set beta=0.66 and eta=0.75. Covariance is the covariance of a country's growth with the World, OECD or Netherlands (average) growth in a ten year window up until that year.

Table A4: Inspecting the Mechanism (OECD data)

	(1) Updating on World Data Alone	(2) Updating on Country Data (D = 1000)	(3) Updating on Country Data (D = 100)	(4) Updating on Country Data (D = 10)	(5) Updating on Country Data (D = 2)
VARIABLES	FDI Inflow	FDI Inflow	FDI Inflow	FDI Inflow	FDI Inflow
variance of productivity growth (estimated on world level)	-0.257**				
	(0.114)				
mean productivity growth (estimated on world level)	0.0446				
	(0.0765)				
variance of productivity growth (estimated on country level)		-0.607***	-0.630***	-0.506**	-0.212
		(0.191)	(0.129)	(0.197)	(0.165)
mean productivity growth (estimated on country level)		0.390***	0.399***	0.252***	0.441***
		(0.143)	(0.107)	(0.0932)	(0.133)
country fixed effects	yes	yes	yes	yes	yes
control of total FDI flow	yes	yes	yes	yes	yes
Observations	840	838	838	838	838
Number of countrysectorid	33	33	33	33	33

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects poisson regression. Dependant variable is the total OECD FDI flows that year that go into country. All explanatory variables are lagged by one year and weighted by their standard deviations. The sample is restricted to countries that changed level of executive constraints between high and low executive constraints once. D=1000 means that the prior is given a weight equivalent to 1000 country/year observations. This implies that the growth history of the country receives very little weight. D=2 means that the prior is given a weight equivalent to 2 country/year observation. This gives most weight to the country-specific history. We set beta=0.66 and eta=0.75.

Table A5: Instpecting the Mechanism (Positive Net Inflows)

Panel A: Sector Level

	(1)	(2)	(3)	(4)	(5)
	Updating on World Data Alone	Updating on Country Data (D = 1000)	Updating on Country Data (D = 100)	Updating on Country Data (D = 10)	Updating on Country Data (D = 2)
VARIABLES	FDI Inflow	FDI Inflow	FDI Inflow	FDI Inflow	FDI Inflow
variance of productivity growth (estimated on world level)	-0.271**				
	(0.123)				
mean productivity growth (estimated on world level)	-0.00933				
	(0.0891)				
variance of productivity growth (estimated on country level)		-0.428*	-0.650***	-0.512**	-0.151
		(0.232)	(0.175)	(0.212)	(0.206)
mean productivity growth (estimated on country level)		0.122	0.355**	0.217	0.432***
		(0.177)	(0.177)	(0.144)	(0.165)
country/sector fixed effects	yes	yes	yes	yes	yes
control of total FDI flow	yes	yes	yes	yes	yes
Observations	9,618	9,590	9,590	9,590	9,590
Number of countrysectorid	394	394	394	394	394

Panel B: Country Level

	(1)	(2)	(3)	(4)	(5)
VARIABLES	FDI Inflow	FDI Inflow	FDI Inflow	FDI Inflow	FDI Inflow
variance of productivity growth (estimated on world level)	-0.219				
	(0.159)				
mean productivity growth (estimated on world level)	-0.00968				
	(0.122)				
variance of productivity growth (estimated on country level)		-0.411	-0.596***	-0.411*	-0.0370
		(0.261)	(0.193)	(0.235)	(0.251)
mean productivity growth (estimated on country level)		0.179	0.374*	0.282**	0.551***
		(0.223)	(0.204)	(0.128)	(0.204)
country fixed effects	yes	yes	yes	yes	yes
control of total FDI flow	yes	yes	yes	yes	yes
Observations	903	901	901	901	901
Number of countries	33	33	33	33	33

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects poisson regression. Dependant variable is the total FDI flows that year (in that sector) that goes into country. All explanatory variables are lagged by one year and weighted by their standard deviations. The sample is restricted to countries that changed level of executive constraints between high and low executive constraints once and excludes the Lebanon. "D=1000" means that the prior is given a weight equivalent to 1000 country/year observations. This implies that the growth history of the country receives very little weight. "D=2" means that the prior is given a weight equivalent to 2 country/year observation. This gives most weight to the country-specific history. We set beta=0.66 and eta=0.75.

Table A6: Sample Robstness, Country Level

	(1)	(2)	(3)	(4)
	whole sample Updating on Country Data (D = 10)	only transitions Updating on Country Data (D = 10)	only one transition in or out Updating on Country Data (D = 10)	only permanent transitions to strong Updating on Country Data (D = 10)
VARIABLES	FDI Inflow	FDI Inflow	FDI Inflow	FDI Inflow
variance of productivity growth (estimated on country level)	-28.41	-72.06**	-86.57***	-121.4***
	(27.97)	(28.71)	(30.44)	(27.30)
mean productivity growth (estimated on country level)	29.81***	17.35***	15.58***	19.22***
	(7.691)	(4.973)	(5.071)	(3.807)
country fixed effects	yes	yes	yes	yes
control of total FDI flow	yes	yes	yes	yes
Observations	3,809	901	761	433
Number of countrysectorid	144	33	28	16

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects poisson regression. Dependant variable is the total investment flows that year that goes into country. All explanatory variables are lagged by one year. "D=10" means that the prior is given a weight equivalent to 10 country/year observations. Note that variables are not weighted so that coefficients cannot be compared across regressions. We set beta=0.66 and eta=0.75.

Table A7: Counterfactual FDI Flows (Permanent Adopters of Strong Constraints)

	(1)	(2)	(3)	(4)	(5)	(6)
			adoption of strong constraints without change in mean productivity growth		adoption of strong constraints without change in variance of productivity growth	
		(I)	(II)	ln(II)-ln(I)	(III)	ln(III)-ln(I)
country	mean yearly investment inflows	fitted value of investment inflows	simulated fitted value of investment inflows	effect of change in mean on inflow	simulated fitted value of investment inflows	effect of change in variance on inflow
Albania	82980	69573	37000	**63%**	22382	**113%**
Botswana	11054	12576	34762	**-102%**	891	**265%**
Bulgaria	331913	315613	680794	**-77%**	268575	**16%**
Chile	595607	581895	309060	**63%**	45623	**255%**
Croatia	586638	792784	377831	**74%**	12976	**411%**
Greece	1028152	970188	1158366	**-18%**	210837	**153%**
Hungary	2286080	2321929	3370477	**-37%**	1249057	**62%**
Kenya	129095	135311	116548	**15%**	97413	**33%**
Mongolia	461	34015	51629	**-42%**	22693	**40%**
Nicaragua	11384	12168	10903	**11%**	36	**581%**
Poland	3718198	3541634	2685668	**28%**	858907	**142%**
Romania	3310134	3374032	3465433	**-3%**	907398	**131%**
Slovakia	1189883	1237702	1240052	**0%**	135461	**221%**
Taiwan	1503860	1503278	3102473	**-72%**	772518	**67%**
Turkey	1411081	1390372	1428078	**-3%**	566812	**90%**
Uruguay	195777	194262	144009	**30%**	48124	**140%**
			AVERAGE:	**-4%**	AVERAGE:	**170%**

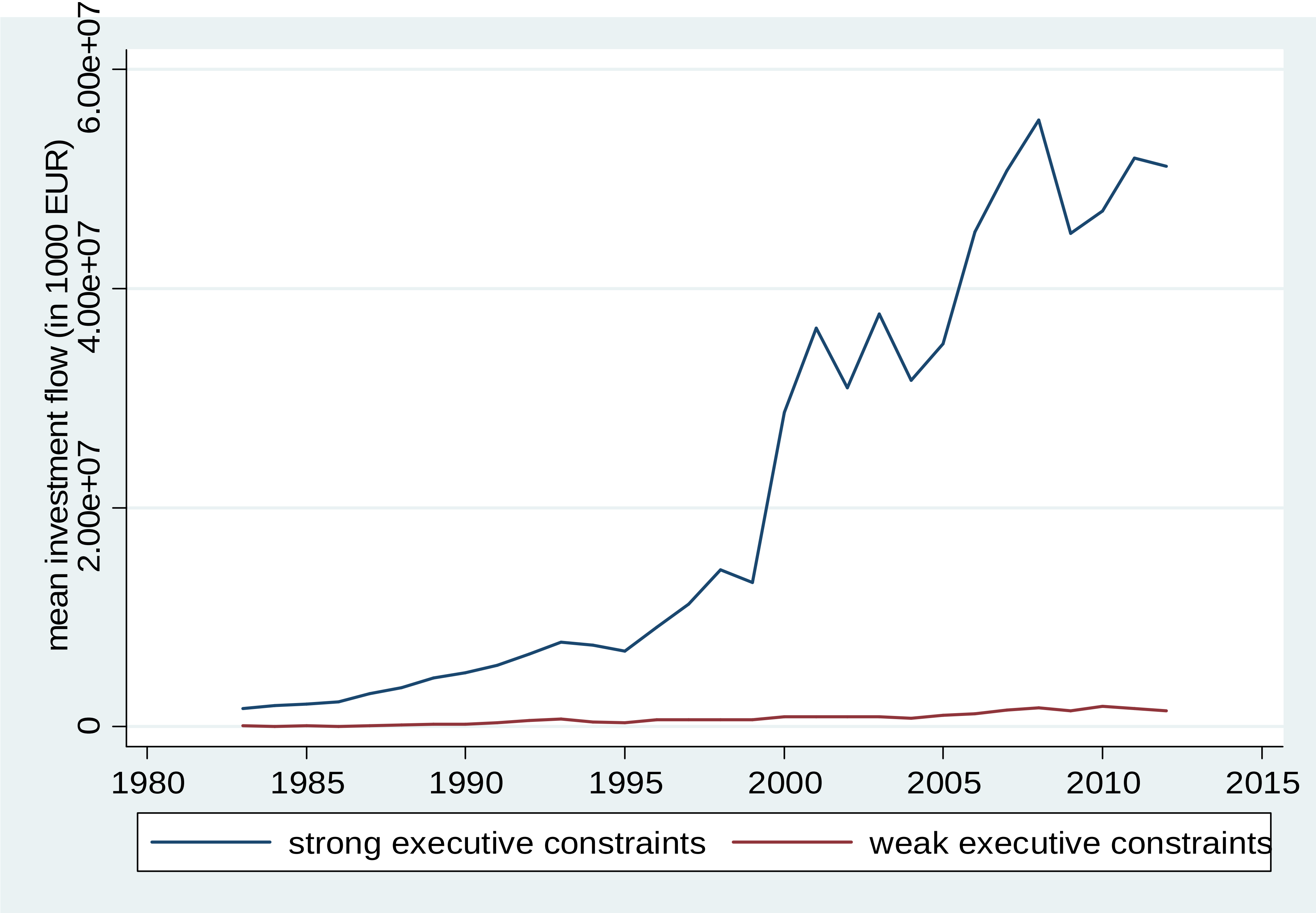
Notes: All inflows are average yearly inflows during strong executive constraints (in 1000 EUR). "mean yearly inflows" is the actualy average yearly inflow of investment into the country. "fitted value of investment inflows" is the fitted value from Table 5, Column (4), Panel B. "simulated fitted value of investment inflows" replaces the mean (in (II)) and the variance (in (III)) in the episode with strong executive constraints with the average mean and variance in the episode with weak executive constraints. The difference between (I) and (II) ((III) respecitvely) captures the effect of changes in the expected mean (variance) on investment inflows in the model.

Table A8: Two Stage Results

VARIABLES	(1) strong executive constraints	(2) Investment Inflow	(3) Number of Industries with Inflows	(4) Investment Inflow (OECD data)	(5) Investment Inflow (UNCTAD data)
share of contigious countries with strong executive constraints	0.442***				
	(0.0242)				
strong executive constraints (fitted values)		2.191***	1.470***	0.993*	1.106
		(0.781)	(0.388)	(0.600)	(0.755)
country fixed effects	yes	yes	yes	yes	yes
exposure: total FDI flow	no	yes	no	yes	no
Observations	5,500	4,420	4,420	4,335	4,458
R-squared	0.059				
Number of countryid	164	154	154	157	156

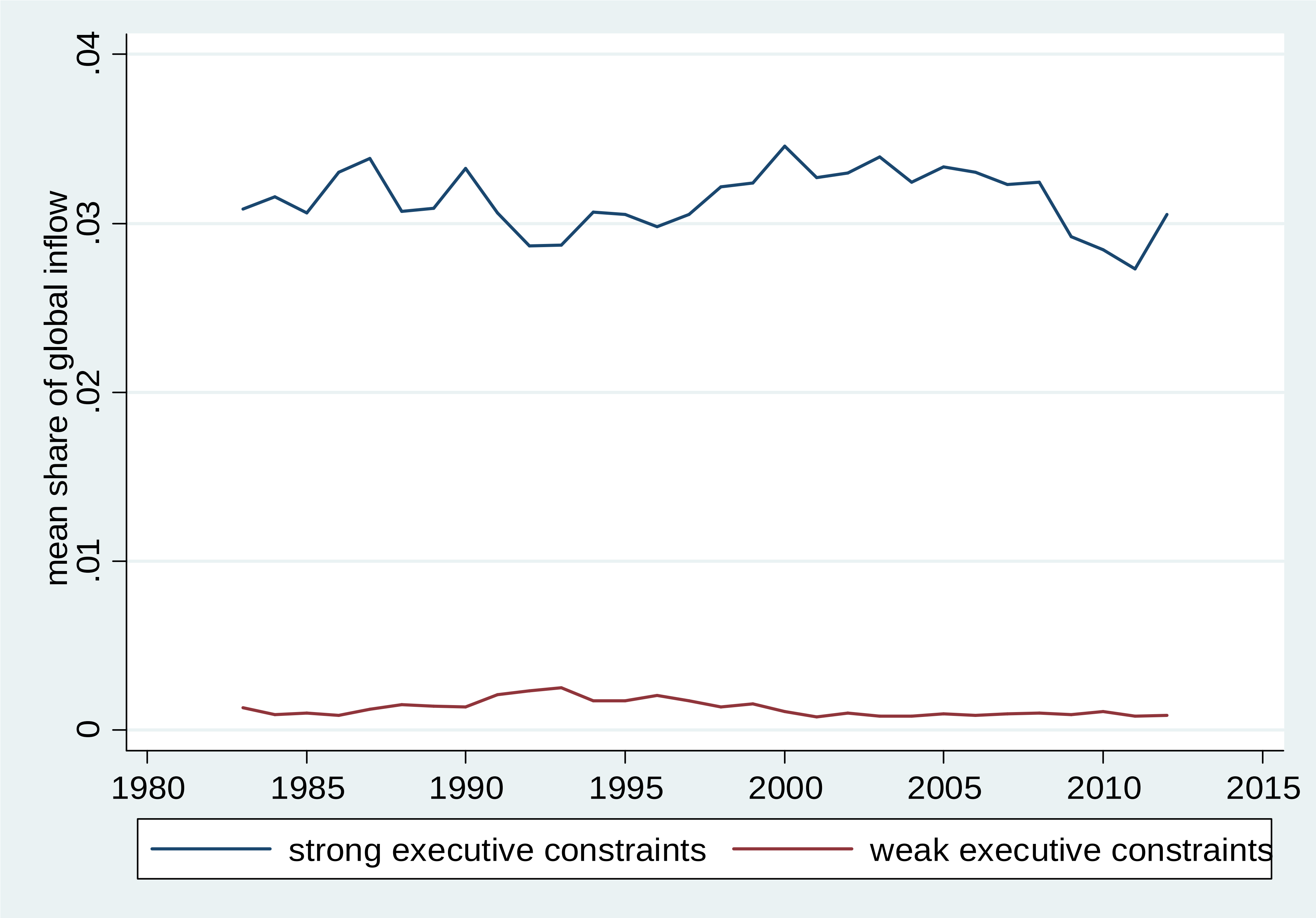
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from fixed effects regressions. Columns (2), (4) and (5) use a pseudo poisson framework and the exposure option. The exposure variable is the sum of foreign investment flows in the same year. Dependant variable in column (2) is the gross investment inflow from the Netherlands into the country. Column (3) uses the number of industries with a positive inflow. Dependant variable is the flow of investment from all OECD countries in column (4) and from all countries in column (5).

Figure 1: Investment Inflows over Time (Mean Flow)



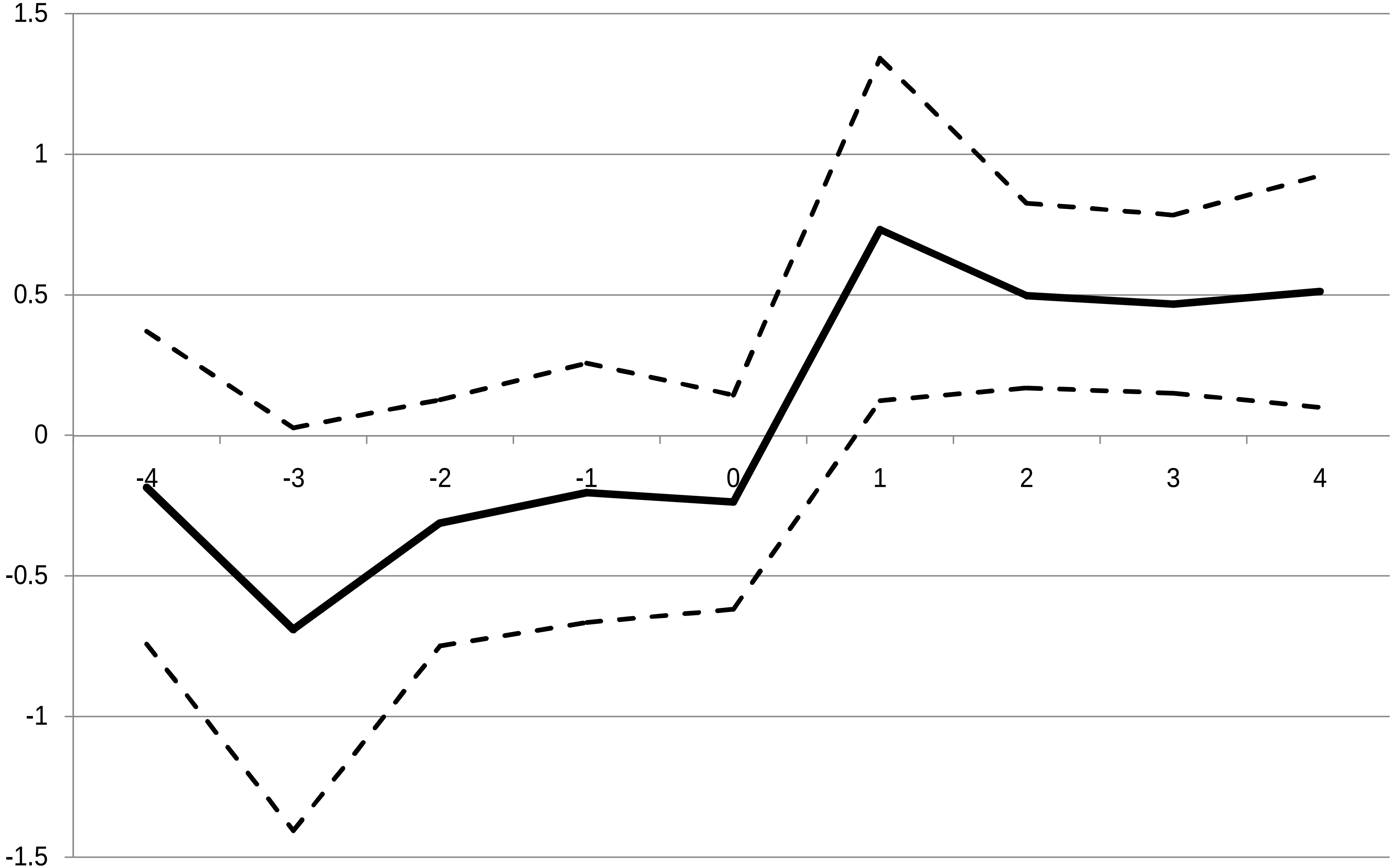
Note: Graph shows average for countries that were always in strong or weak executive constraints.

Figure 2: Investment Inflows over Time (Mean Share)



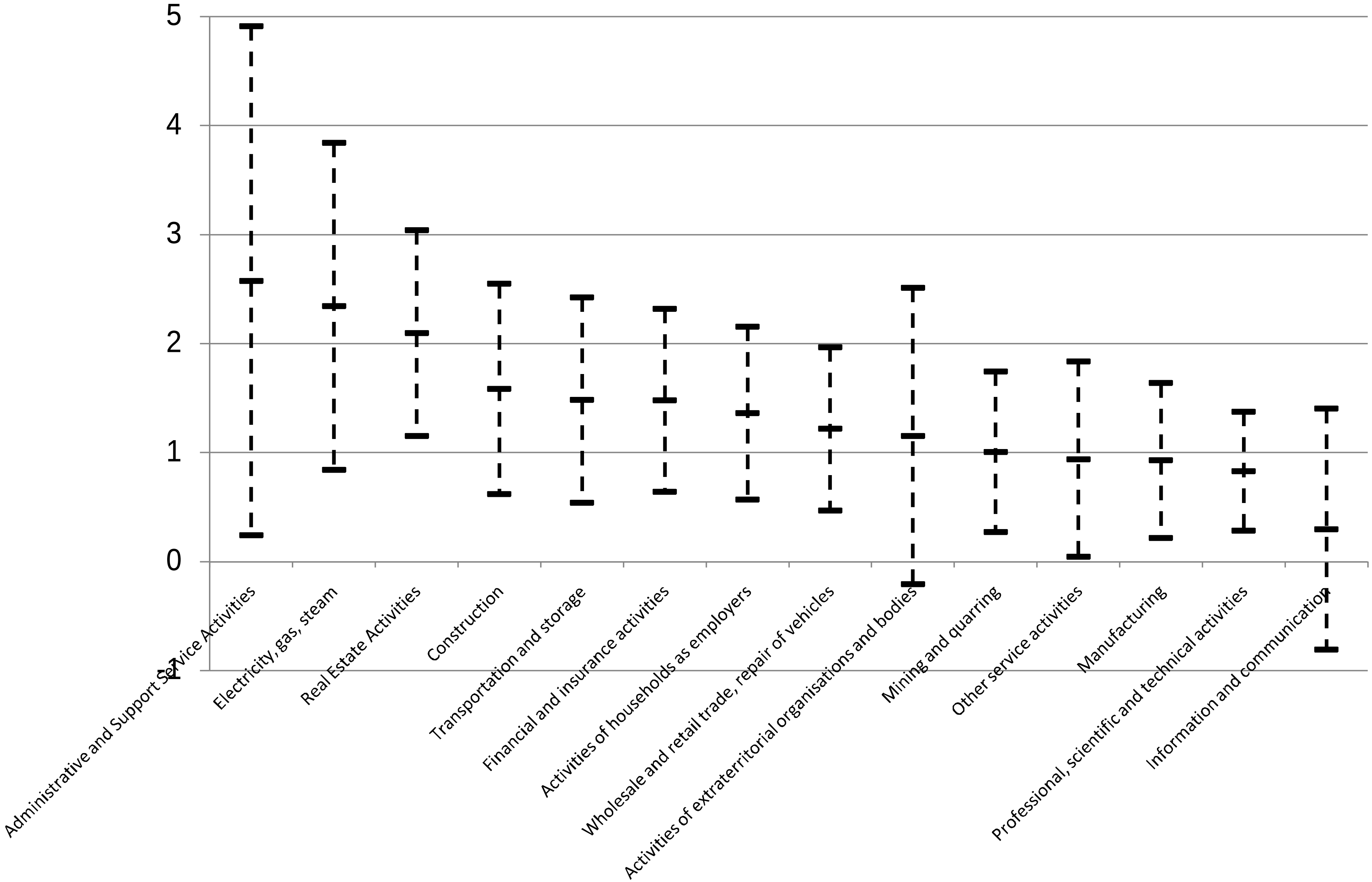
Note: Graph shows average for countries that were always in strong or weak executive constraints.

Figure 3: Adoption of Strong Executive Constraints



Solid line shows coefficients on leads and lags around the adoption date (at 0) of strong executive constraints plus the coefficient on the “strong executive constraints” dummy. Dashed lines show 95% confidence intervals using the standard deviation of the lead and lag coefficients.

Figure 4: Sector Heterogeneity



Note: Figure displays regression coefficients and 95% confidence intervals. Coefficients come from a regression as in Table (1), Column (1) in which executive constraints are interacted with a set of sector dummies. Figure reports results on the 14 largest sectors.

Figure 5: Executive Constraints and GDPpc Growth

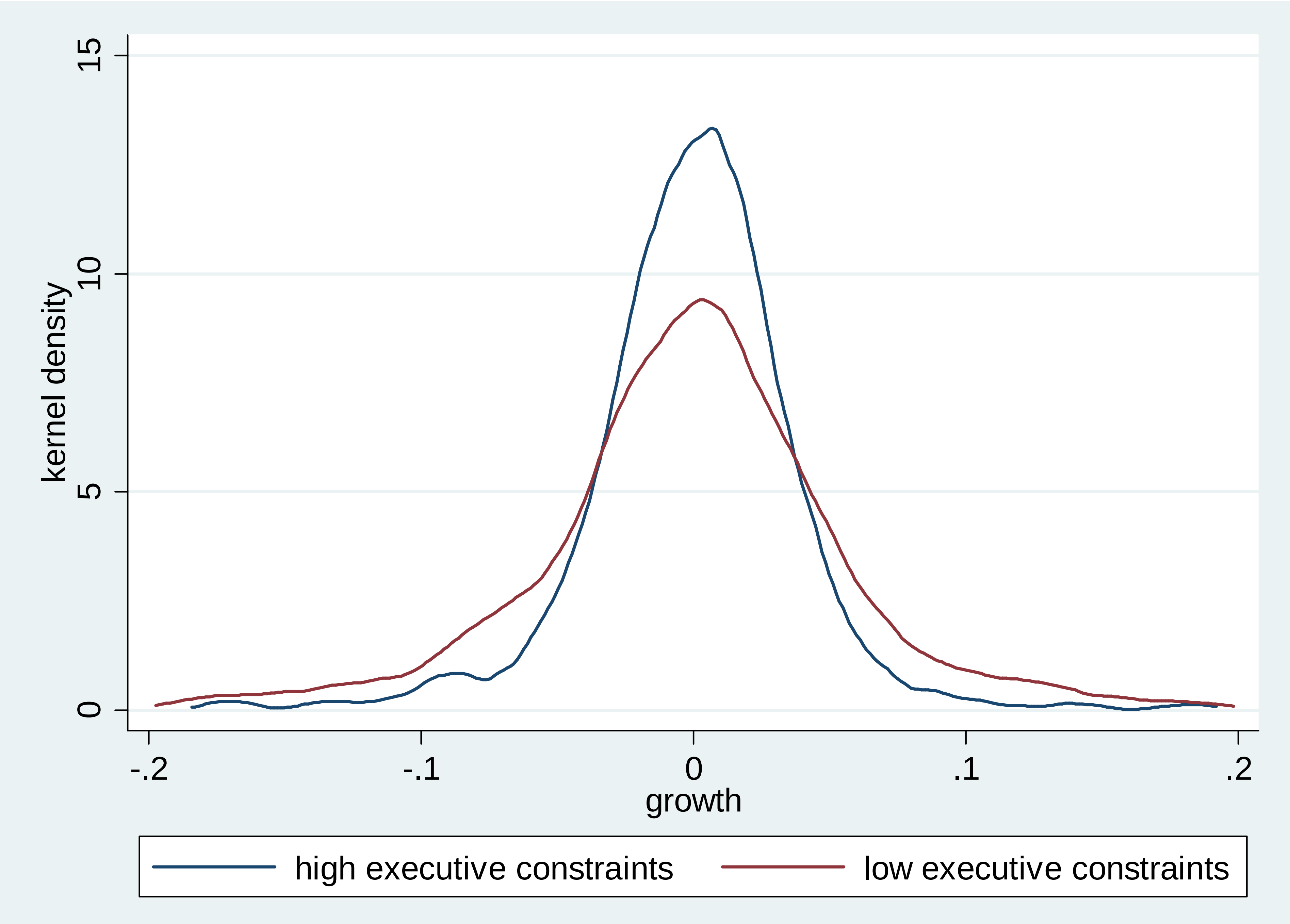


Figure 6: Executive Constraints, Stability and Foreign Investments – D=10

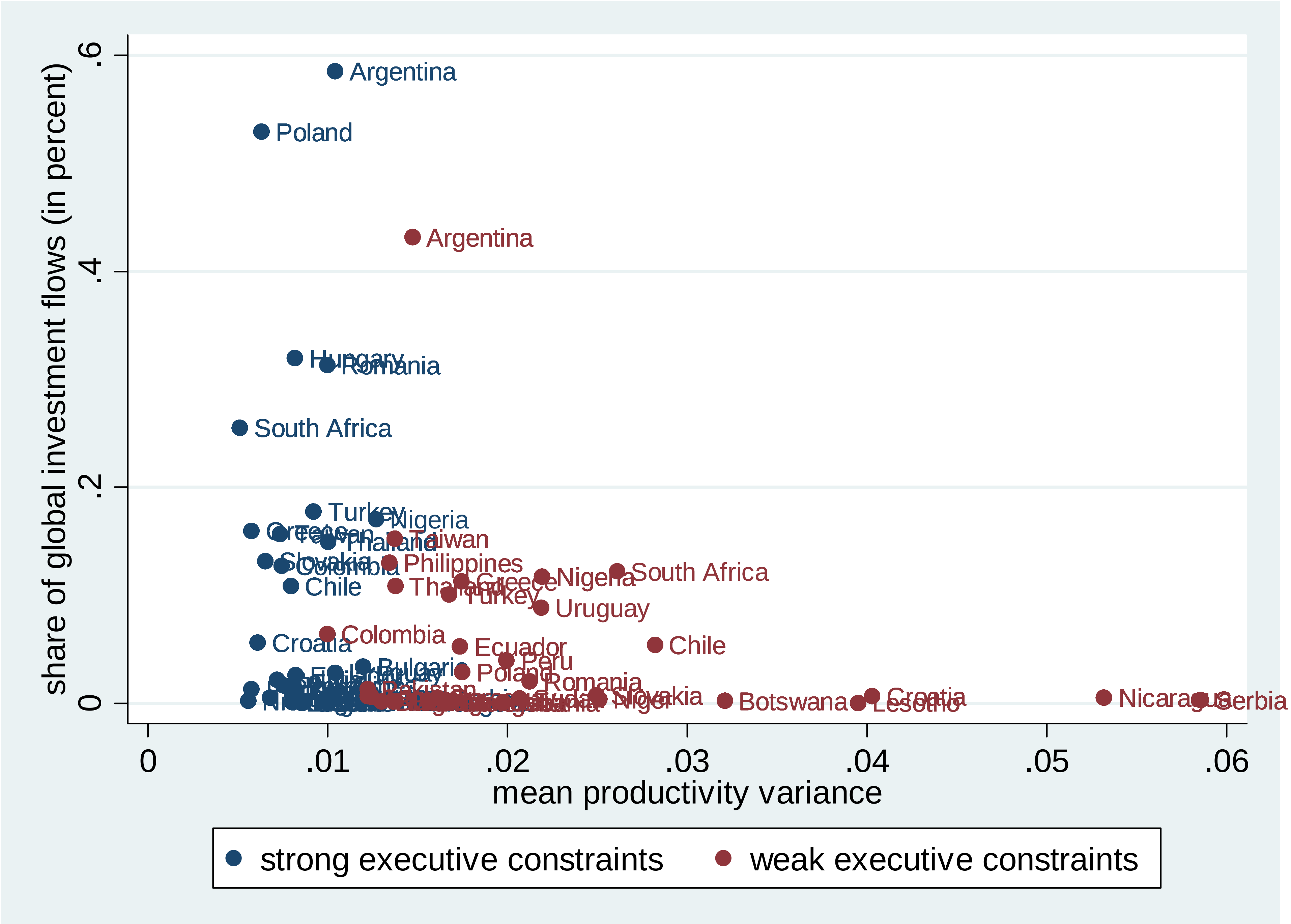


Figure A1: Share of Countries with Strong Executive Constraints

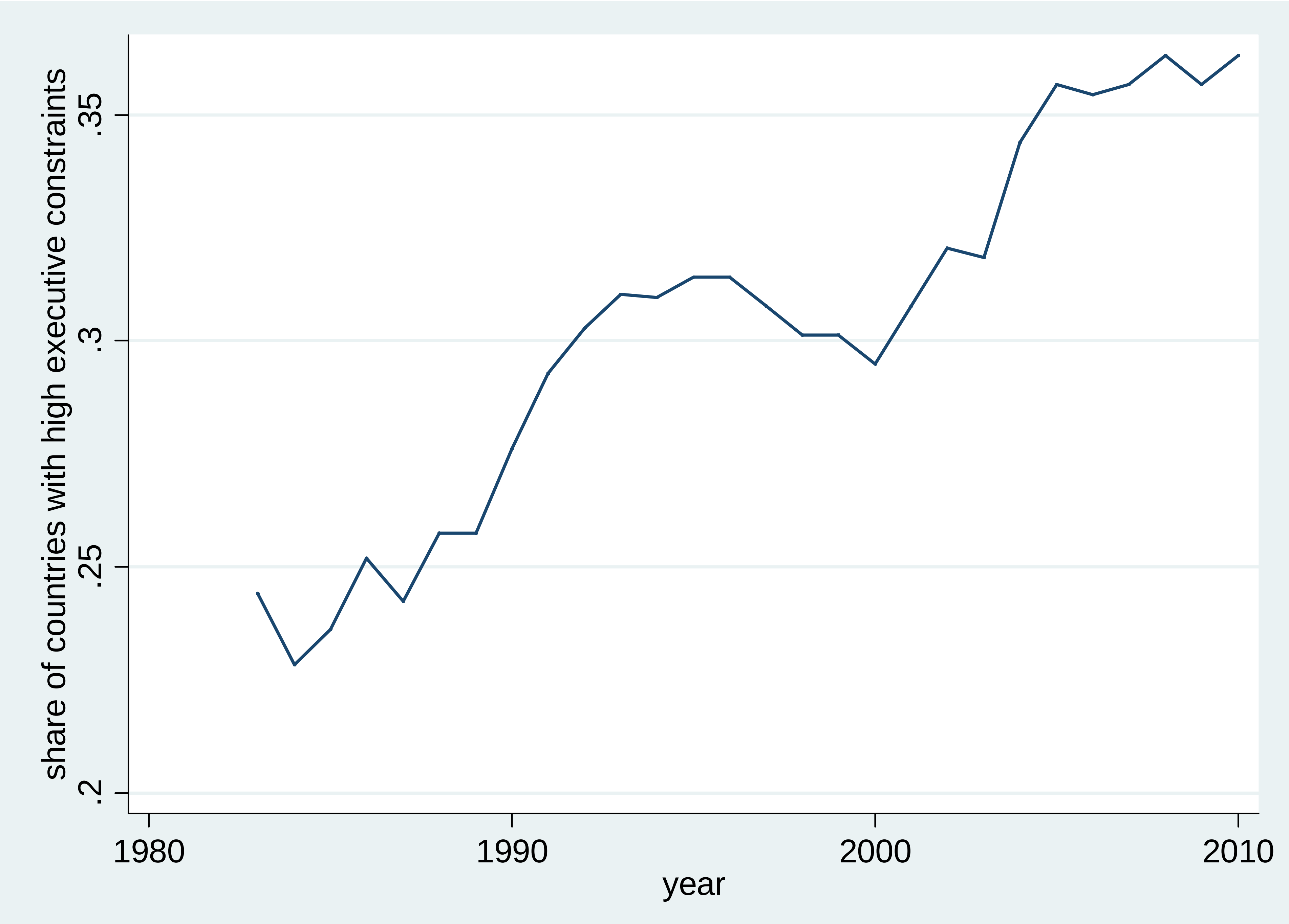
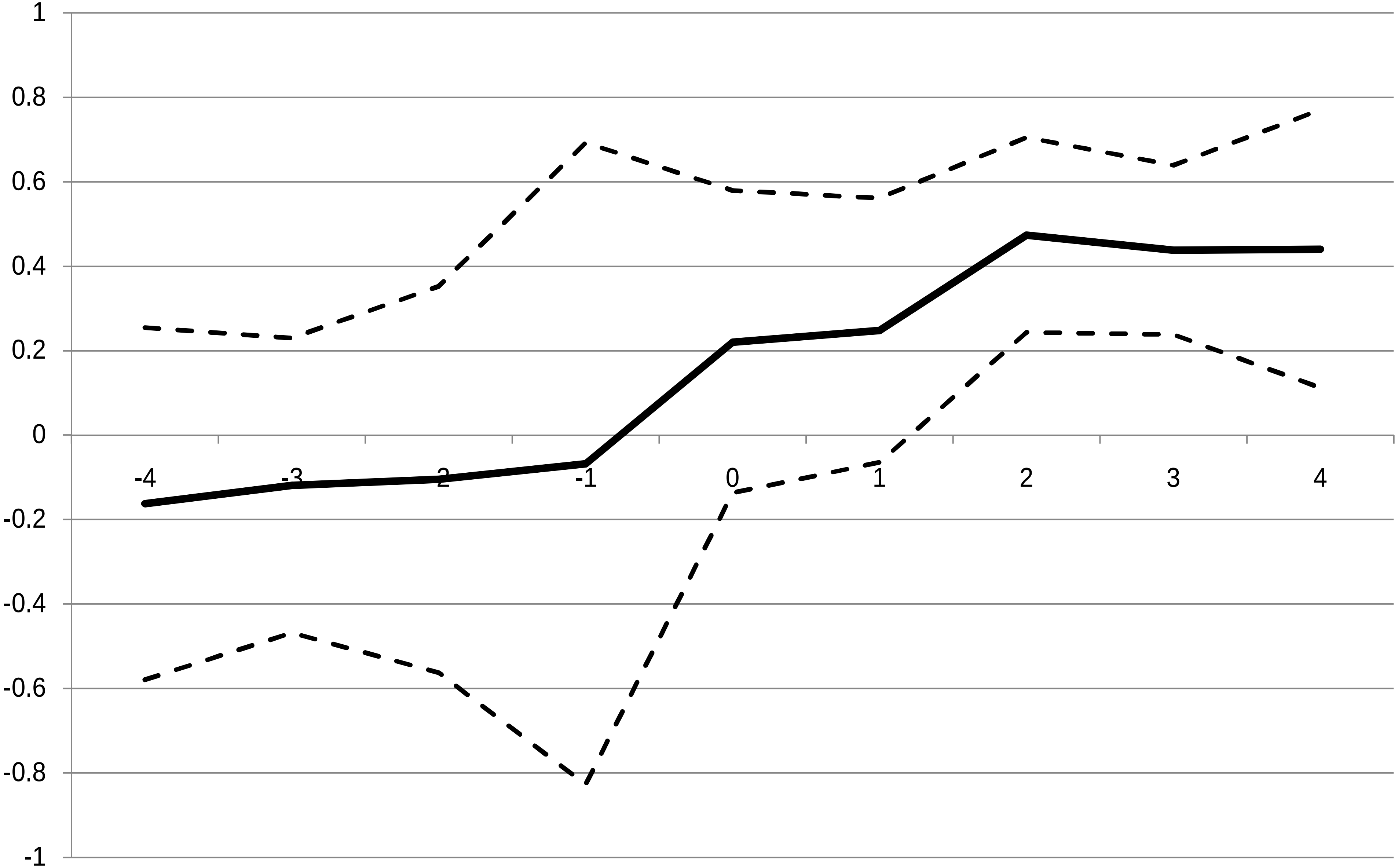


Figure A2: Adoption of High Executive Constraints and UNCTAD Investment Flows



Solid line shows coefficients on leads and lags around the adoption date (at 0) of high executive constraints plus the coefficient on the “strong executive constraints” dummy. Dashed lines show 95% confidence intervals using the standard deviation of the lead and lag coefficients.

Figure A3: World Belief of Standard Deviation