Unbundling Institutions for Corporations

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JEL classification: F30; F65; G30

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1. Introduction

Defined as the internal funds minus capital expenditure, a company's free cash flows (FCF) measure two different things on a single scale. When positive, it represents the resources available for payouts but at the discretion of corporate insiders. When negative, it quantifies the investment made possible by external funding. Obviously, firms with positive FCF are fundamentally different from those with negative FCF. It is therefore conceivable that different institutions are summoned—or different roles are played by institutions—to deal with the problems associated with the respective FCF. In other words, a country's institutions for corporations could be categorized by the sign of FCF into those for positive-FCF firms and those for negative-FCF firms. To the extent that this conjecture holds true, it is warranted to examine which institutions create a meaningful cross-country difference in economic outcome. It is because institutions are believed to be the main determinant of a country's economic performance and, thus, the answer to that inquiry can show policymakers where to deploy resources to advance their country ahead of others. In this paper, we conduct this analysis.

The "unbundling" of a country's institutions is not new. Most notably, Acemoglu and Johnson (2005) consider two types of institutions in a country—namely, *contracting* institutions and *property rights* institutions—based on North's (1981) notion on the state's role in the economy. Our approach is different and complementary, as we narrow down to corporations and build on the facts that: (1) there are two disparate classes of companies—firms with positive FCF and firms with negative FCF—and (2) they work in polar opposite institutional environments. Specifically, positive FCF is the corporate resources at the discretion of corporate insiders and could be detrimental to valuation unless relevant institutions ensure that those resources are not misused by corporate insiders. That is, ***resources-policing*** institutions are called in. Negative FCF, on the other hand, means that companies are investing more than they can afford internally. Therefore, ***growth-fostering*** institutions are in order, which can correctly identify and finance corporate growth potential.

"Two sides of the same coin?" would be the immediate concern about categorizing institutions into two subgroups. This criticism applies to all prior studies on unbundling institutions, including Acemoglu and Johnson (2005) as well as ours. We address this issue after outlining our empirical strategy and results, as the way we utilize data and what the data tell us can mitigate the concern at least in part.

To compare the workings of the two types of institutions for corporations across countries, we employ the following two empirical strategies. First, we build on some of the well-established empirical regularities. Firm value has been found to be higher (lower) in countries with high-quality (low-quality) institutions (e.g., La Porta, Lopez-de-Silanes, Shleifer, and Vishny (LLSV) 2002; Durnev and Kim 2005). Similarly, legal origin has been found to be a robust empirical proxy for—if not a cause of—a country's institutions and their effectiveness (e.g., La Porta, Lopez-de-Silanes, and Shleifer (LLS) 2008). Based on those results, we estimate for each country the average firm value separately for positive-FCF and negative-FCF firms (hence, two valuation measures for one country), and then

examine whose valuation shows greater variation across countries and lines up more sharply with legal origins.

Second, we replace firm value with its cross-sectional relation to FCF (***FCF beta***, hereafter). Let us first motivate this measure by reminding the reader of the wedge between theoretical and empirical FCF. While FCF in theory is the internal funds after all positive net-present-value projects are taken and is thus irrelevant to firm value, the empirical FCF is measured as the internal funds minus the *actual* capital expenditure. As such, it is affected by various market imperfections, and how this actual FCF is related to firm value reveals how well or poorly the surrounding institutions handle those market imperfections. On these grounds, we regress firm value on FCF cross-sectionally within positive-FCF firms or within negative-FCF firms, so that we obtain two FCF betas from one country. As explained above, effective resources-policing institutions assure outside investors of the appropriate handling of corporate internal resources. With those institutions in place, thus, positive FCF is no longer a red flag and can increase with firm value. That is, effective ***resources-policing*** institutions would lead to a positive FCF beta among positive-FCF firms (i.e., the more internal resources, the higher valuation). Good growth-fostering institutions, on the other hand, are those that aptly spot and support corporate growth opportunities. With such institutions at work, therefore, negative FCF is allowed to run on as a sign of externally proven growth prospects and can be associated with a higher valuation. In other words, active ***growth-fostering*** institutions would render the FCF beta more negative among negative-FCF firms (i.e., the more investment funded externally, the higher valuation). Using legal origins as a proxy for the quality of a country's institutions, we examine which one—between the FCF beta among positive-FCF firms and the FCF beta among negative-FCF firms—shows greater systematic variation across countries. More precisely, we examine whether the FCF beta among positive-FCF firms is more positive in countries with better institutions, or whether the FCF beta among negative-FCF firms is more negative in those countries, or both.

Using 474,042 firm-year observations from 43 countries for the period of 2000-2018, we find the following results.

- Firm value differs a lot more across countries when it is estimated with negative-FCF firms than with positive-FCF firms.
- Firm value is significantly higher in common law countries than in (French) civil law countries only with negative-FCF firms. Such a pattern is weak to non-existent with positive-FCF firms.
- FCF beta differs a lot more across countries when it is estimated within negative-FCF firms than with positive-FCF firms.
- FCF beta within negative FCF firms is significantly more negative in common law countries than in (French) civil law countries. No such pattern exists with the FCF beta for positive-FCF firms.

In short, the systematic variation across countries is concentrated in negative-FCF firms. To the extent that the metrics we use—i.e., firm value, FCF, and FCF beta—are shaped up by the institutions

in a country, it follows that a meaningful cross-country difference—i.e., the difference that leads to different economic outcomes—exists in ***growth-fostering*** institutions. Conversely, the near-absence of cross-country differences with positive-FCF firms indicates that the institutions for those companies—i.e., ***resources-policing*** institutions—do not make much difference at the country level. Below we discuss how these dichotomous results can arise, and then return to the "two sides of the same coin" issue.

Acemoglu and Johnson (2005) argue that people can work around weak contracting institutions by changing the terms of contracts. That is, even though the state may not be adequately enforcing private contracts, people can find workarounds by modifying the contract itself. However, no such alternative solution is possible—the authors argue—when it comes to direct business with the state or its elites. It is because they themselves are "the ultimate arbiter of contracts" (Acemoglu and Johnson 2005; p.951). Hence, the relevance of property rights institutions (which govern the interactions between the state and its citizenry) and the irrelevance of contracting institutions (which manage the contracts among ordinary people).

The same logic can apply to our findings. Companies with positive FCF may well have various firm-level and industry-wide governance provisions—besides country-specific ones—that can assure outside investors of the proper use of internal funds by corporate insiders. It is also likely that companies and industries with more positive FCF have more effective institutional schemes in place (regardless of the direction of causality). As a result, positive FCF may find its way to firm value via non-country-specific channels. If true, then country-specific factors in FCF, firm value, and FCF beta would weaken and accordingly a result like ours could arise. While the same could be said of negative-FCF firms and their growth-fostering institutions, our data already says otherwise.

For our reasoning above to be valid, there should be strong country-specific factors ("country effects") in the metrics of negative-FCF firms whereas positive-FCF firms contain greater industry-wide commonalities ("industry effects") as well as greater firm-specific components. We test these predictions by directly comparing country effects with industry effects, alongside firm-specific elements, in our metrics. We find:

- Negative FCF has larger country effects than industry effects. In positive FCF, the two effects are similar in magnitude.
- Positive FCF has large firm-specific components accounting for more than 90% of the total variation, whereas negative FCF has less than 70% of its variation attributable to firm-specific factors.
- The valuations of negative-FCF firms have larger country effects than industry effects. In the valuations of positive-FCF firms, the two effects are comparable in magnitude.

In a sense, these results are expected because corporate internal resources (i.e., positive FCF) are readily observable so their monitoring and policing can be targeted at the firm level. In contrast, corporate growth is subtle by nature and one would need to support it in a broader context. After all,

almost tautologically, as a company grows and matures, resources increasingly accumulate under the direct ownership and control of the company. Thus, resources policing can be best done at the individual firm level, and to a lesser degree at an aggregate level where economic fundamentals are homogeneous (i.e., industry).

We now address the issue of "two sides of the same coin". Let us begin with a quote from LLSV (2002; p.1147), which reads:

"*… outside investors are willing to pay more for financial assets such as equity and debt… because… with better legal protection, more of the firm's profits would come back to them as interest or dividends as opposed to being expropriated… In turn, this enables more entrepreneurs to finance their investments externally…*"

For a given firm, however, this conceptual feedback between payout and funding does not work. As shown by the authors themselves in another paper, companies do not pay out in anticipation of future funding (LLSV 2000). On the contrary, companies pay because: (1) they have money, (2) they have few projects in which to invest, and (3) they are pressured to pay. The point is, a company at a certain point in time is subject to either resources-policing institutions or growth-fostering institutions, but not both. As a result, its performance is a function of either type of institutions, not both.

Of course, it is plausible and likely that in an environment where corporate resources are closely monitored for one group of companies, investors are motivated to fund another group of companies thinking that they will be fairly paid in the future when those companies start generating stable cash flows. Accordingly, the demand for growth-supporting institutions arises and the supply could follow. In the end, countries with good resources-policing institutions will tend to have good growth-fostering institutions as well. In no way, however, does this mean that the two types of institutions equally contribute to the cross-country difference in economic outcomes. It needs testing empirically and one can do so only by focusing on different groups of companies under the respective type of institutions. That is exactly what we do in this paper.

The "two sides of the same coin" issue is also refuted by Acemoglu and Johnson (2005) who forcefully argue that "there are distinct dimensions of the broad cluster of institutions" (p.954). By empirically distinguishing contracting institutions from property rights institutions with instrumental variables (legal origins for the former and colonial properties for the latter), the authors show that cross-country differences in economic performance is attributable more to property rights institutions than to contracting institutions. Interestingly, their analysis shows that one of their performance measures—namely, stock market capitalization—is uniquely affected by both types of institutions. In other words, this result leaves the corporate sector as a niche that warrants a new angle. Given that the sector is populated by disparate groups of companies (e.g., small vs. large, growth vs. value, young vs. old, etc.), one can consider unbundling institutions into those serving each group. That is exactly what we do in this paper, using the most clear-cut sorting key, both conceptually and empirically—i.e., FCF and its sign.

Hence, the ultimate question. What are those hypothesized institutions? One way of identifying them is to use existing measures that cover different aspects of a country's institutions and gauge their ability to replicate the observed effects. Through their relative abilities, we can then understand the nature and characteristics of the hypothesized institutions. In a sense, this approach is an attempt to unpack legal origin into more granular components by treating those existing measures as if they were the subindices of the legal origin. Certainly, an important verification in this replication is to see whether those measures are related only to the metrics of negative-FCF firms, as in our earlier results. We thus associate each of the World Bank's 11 Doing Business Indicators (DBIs; one of which is an overall index) with the FCF beta, separately for positive-FCF and negative-FCF firms. We find:

- A higher score of each of the DBIs is associated, in varying degrees, with a more negative FCF beta of negative-FCF firms.
- Of them, "Starting a business" DBI is most important, but other DBIs such as "Getting credit" and "Paying taxes" are also significant.
- None of the DBIs are significantly related to the FCF beta of positive-FCF firms, except "Getting credit".

We continue this test using another metric that embodies our hypothesis from a different angle. To wit, good growth-fostering institutions allow negative FCF to be accepted as a sign of externally proven growth prospect rather than frowned upon. That is, the occurrence and, more importantly, the duration of negative FCF are expected to increase with the quality of growth-fostering institutions. We thus compute the probability of negative FCF in a country and examine whether it is associated with a higher score of the country's DBIs. We also compute the probability of positive FCF and see if it remains unrelated to the country-level measures like the DBIs. Indeed, we find:

- A higher score of the DBIs is associated with a higher probability of negative FCF, especially when conditioned on negative FCF in the previous year.
- The association pattern across the DBIs is remarkably similar to the one for the relation between the DBIs and the FCF beta.
- None of the DBIs are significantly related to the probability of positive FCF.

Finally, we replace the DBIs with the World Bank's Worldwide Governance Indicators (WGIs), and find the qualitatively same results both with the FCF beta and the probability of positive/negative FCF.

In sum, the mosaic of our results demonstrate, quite convincingly, that: (1) a country's institutions work differently between positive- and negative-FCF firms, and (2) cross-country differences are concentrated in the performance of negative-FCF firms. On these grounds, we argue that a country's institutions for corporations can be unbundled into those for positive-FCF firms and those for negative-FCF firms and that this categorization is useful because the cross-country differences are driven only by those for negative-FCF firms, which we call the growth-fostering institutions.

The rest of the paper proceeds as follows. Section 2 reviews related literatures and highlights our

contributions to them. Section 3 explains the sample and data. Section 4 reports the baseline empirical results, and Sections 5 through 8 offer additional empirical analyses and results. Section 9 concludes the paper.

2. Related literatures

Our paper belongs to the literature on institutions and their impacts on economic outcome, which dates back at least to North and Thomas (1973) and North (1981, 1990). North (1991) remains an excellent introduction to this literature and early empirical evidence is available in Knack and Keefer (1995), Mauro (1995), and Hall and Jones (1999). Then come Acemoglu, Johnson, and Robinson (AJR 2001) who address a more fundamental question of *why* institutions differ across countries in the first place and then cause varying economic performances subsequently. The authors show that the institutional differences originate from unequal colonial experiences and then lead to diverging economic outcomes across countries. The importance of institutions is further confirmed by later studies (e.g., Easterly and Levine 2003; Rodrik, Subramanian, and Trebbi 2004; AJR 2012). To this literature, we add: (1) there are two different types of institutions for corporations—namely, resources-policing institutions and growth-fostering institutions—and (2) it is the latter that is associated with a significant cross-country difference in economic outcome.

Another literature to which our paper belongs is a large body of research on law and finance. At the beginning, this literature did not point to institutions as a key determinant of economic growth (LLSV 1998). In a later study, the role of institutions is more explicitly recognized, in that a country's legal origin exogenously determines the way that various legal and regulatory institutions develop and those institutions, in turn, affect economic outcomes (La Porta, Lopez-de-Silanes, and Shleifer (LLS) 2008; p.292). Along the way, legal origin has been interpreted increasingly liberally and it now presents itself as a proxy for "a style of social control of economic life" (LLS 2008; p.286). This characterization of legal origins resonates quite well with North's (1991) definition of institutions, which is "humanly devised constraints that structure political, economic and social interaction" (p.97). In a word, legal origins can speak to the institutional environments of a country, as is also argued by Glaeser and Shleifer (2002). Furthermore, given a myriad of papers that empirically document the pervasive correlation of legal origins with country-level institutions and their effectiveness (see LLS (2008) and the references therein), legal origin is at least a legitimate *empirical* proxy for a country's institutions and their effectiveness. To this literature, we add that the empirical explanatory power of legal origins is more nuanced when it comes to the institutions for corporations. Specifically, cross-country differences in corporate performance—as an outcome of institutions—line up with legal origins only when the performance is measured with a subset of companies in the country—i.e., negative-FCF firms.

A debate in the literature—namely, which one between legal origin (LLSV 1998) and colonial history (AJR 2001) is more fundamental—is not an issue to our paper. Certainly, it is an important

intellectual question and valuable empirical results exist in the literature (e.g., Beck, Demirguc-Kunt, and Levine 2003; Klerman, Mahoney, Spamann, and Weinstein 2011). We, however, use legal origin as an *empirical* proxy, and legal origin and colonial history are empirically "almost perfectly congruent" (Klerman, Mahoney, Spamann, and Weinstein 2011; p.380). Our use of legal origin is simply on the grounds that it has the minimal measurement error. With a few exceptions, there is little disagreement as to a country's legal origin. It is just as factual as, say, Korea is in Asia. (On the other hand, data on colonial history, such as the settlement mortality, has been questioned by later studies – see, e.g., Albouy (2012) and AJR (2012).) Another debate in the literature is whether there is something more fundamental than institutions, such as human capital (e.g., Glaeser, La Porta, Lopez-de-Silanes, Shleifer 2004; Gennaioli, La Porta, Lopez-de-Silanes, and Shleifer 2013; Acemoglu, Gallego, and Robinson 2014; see also the references in Glaeser et al. (2004)). This debate implies the reverse causality in which the national wealth and prosperity (which is caused by something) motivates the development of nation-wide institutions, not the other way around. As noted by Knack and Xu (2017), however, this is less of an issue to an analysis with firm-level data like our paper, because firm-level performance and wealth cumulation is highly unlikely to trigger the development of country-level institutions. Thus, our paper sidesteps this debate as well.

The third related literature is the one on unbundling institutions, which includes Johnson, McMillan, and Woodruff (2002), Acemoglu and Johnson (2005), Cull and Xu (2005), and Knack and Xu (2017). Let us detail this literature so that we can correctly claim our contributions. Johnson et al. (2002) compare the relative importance between property rights and external finance—i.e., political institutions and financial institutions. Using firm-level survey data from five former communist countries (Poland, Slovakia, Romania, Russia, and Ukraine), the authors find that property rights, or equivalently, political institutions are more important. Cull and Xu (2005) take this approach one step forward by focusing on China in the year of 2002. This is the time and place in which the transition of a former communist country to a market economy has transpired significantly (albeit not completely). The conjecture is that, in such a time and place, the relative importance between political institutions and financial institutions could be more balanced than in Johnson et al. (2002). Indeed, Cull and Xu (2005) find that to be the case. Also, following Acemoglu and Johnson (2005), the authors subdivide political institutions into those for citizen vs. state and those for citizens themselves, and find the two types of political institutions to be evenly important for Chinese companies. Of course, it is Acemoglu and Johnson (2005) who formally conceptualize the two types of institutions in the name of property rights institutions and contracting institutions. While their cross-country results largely favor property rights institutions, corporate valuation is uniquely influenced by both contracting and property rights institutions—thereby motivating our paper. As mentioned above, Knack and Xu (2017) seek to overcome the reverse causality between institutions and economic outcome by focusing on firm-level outcome. (Recall that firm-level wealth is unable to improve country-level institutions.) Knack and Xu (2017) also seek to improve the empirical measurement by employing several different measures for each of the two types of institutions. Their main finding is that firm-level external funding is facilitated more by property rights institutions than by contracting institutions.

To this literature, we add a new angle at unbundling institutions: namely, corporate FCF as a way of categorizing institutions for corporations. Specifically, we propose resources-policing institutions for positive-FCF firms (i.e., companies with internal resources in the hands of corporate insiders) and growth-fostering institutions for negative-FCF firms (i.e., companies with investment needs exceeding internal means). Further, we empirically validate this new angle by showing the difference between the two hypothesized types of institutions. More precisely, cross-country differences in corporate performance are huge and well in line with a proven proxy for the quality of country-level institutions *only when* the performance is measured with negative-FCF firms.

Our new angle also sheds light on the measurement issue in this literature. By nature, institutions are both multi-dimensional and complementary. As a result, unbundling them is quite tempting and sensible, but it also needs to be done at a very high level. This creates scope for judgement, noise, and potential bias. Consider, for example, investor protection in the context of "horizontal" vs. "vertical" institutions, which are what Acemoglu and Johnson (2005) suggest as the alternative terms for contracting and property rights institutions, respectively (p.951; footnote 1). Are the institutions for investor protection horizontal or vertical? If investor protection is too broad to consider, narrow down to minority shareholder protection, in which "minority" stands for some shareholders being in the minority in terms of voting power– either literally or via a pyramidal or other structural schemes. Are the institutions for minority shareholder protection horizontal or vertical? It depends.

In an under-developed country, corporate insiders could indulge themselves in the favoritism of state rulers and this political tie could allow them to unfairly dominate outside minority shareholders. Institutions for minority shareholder protection should then be deemed vertical, because the ultimate source of power is the state. In a more developed country, however, various regulatory and legal procedures would make the relationship between corporate insiders and outside minority shareholders relatively more horizontal. If researchers are to use a single categorization scheme for multiple countries, they will have to call it. With a large sample of, say, 100 countries, under-developed countries would outnumber more developed ones and, therefore, it could be judged appropriate to treat the institutions for minority shareholder protection as vertical. This seems to be the choice made by Knack and Xu (2017) for their sample of 119 countries when they categorize "minority investor protection" as a property rights (i.e., vertical) institution. However, in a more focused sample with, say, the Group of Twenty (G-20) countries, the relative presence between under-developed countries and more developed ones is reversed. Thus, if a single categorization rule is to be imposed on the sample, minority investor protection might well be viewed as an outcome of a contracting (i.e., horizontal) institution. Even in those countries—no doubt—the power could remain unbalanced between corporate insiders and outside minority shareholders. Still, it would be for some other reasons (e.g., differing degrees of procedural experiences or differential access to legal services) than the political link to the state rulers. Hence, a contracting institution.

To this situation, our paper offers an alternative perspective. Minority shareholders must be investing in different types of companies at the same time. For companies with idle internal funds,

minority investors would demand that the institutions monitor and police those resources. For other companies with no such internal funds but urgent investment needs, minority investors would demand that the institutions nurture and foster their growth. Thus, a researcher can focus on the primary—if not the exclusive—targets of the respective institutions and examine the performance of those target firms as an indirect way of understanding how well or poorly those demands are met by the institutions.

The fourth and last literature to which our paper belongs is the international studies on corporate investment in relation to country-level institutional characteristics (e.g., McLean, Zhang, and Zhao 2012; Brown, Martinsson, and Petersen 2013; Burkart, Gromb, Mueller, and Panunzi 2014; Lin, Mihov, Sanz, and Stoyanova 2019). McLean, Zhang, and Zhao (2012) in particular show that, for a period of 1990-2007, the investment sensitivity to q is stronger but the investment sensitivity to cash flows is weaker in countries with better investor protection. That is, external financing is facilitated by investor protection. As investor protection is one important function of a country's institutions, their results suggest a less positive or a more negative FCF beta (i.e., the more external funding, the lower FCF and the higher valuation) in countries with higher-quality institutions. What we add to this body of research is the focus on FCF and the distinction between positive-FCF firms and negative-FCF firms. We specifically show that it is the negative-FCF firms that show such a negative FCF beta, and that only this group of companies generates a significant cross-country difference. For positive-FCF firms, on the other hand, the FCF beta is positive. Further, there is weak to no cross-country difference in the performance of positive-FCF firms, as industry-wide and firm-specific institutions are at least as active as country-specific ones.

3. Sample and data

3.1. Sample

To construct the sample, we begin with all Datastream/Worldscope companies for non-U.S. countries and all Compustat firms for the U.S. over the period from 2000 to 2018. (Using FIC='USA', we identify and keep only American companies in Compustat.) The original DataStream/Worldscope data are in thousands of U.S. dollars but we convert them to millions, so that they are comparable to the Compustat data. We only use the firm-year observations in which: (1) both country code and industry code are available; (2) total assets, book value of common equity, and the market value of common equity are positive; and (3) total assets are not smaller than its book value of common equity. We also ensure that the country code and country name in the Datastream/Worldscope database are correctly matched (e.g., code 826 for United Kingdom and not, say, Cayman Islands). For country code, we use FIC in Datastream /Worldscope (for non-U.S. firms) and Compustat (for U.S. firms). For industry code, we use Fama-French's 48 industries. As a result, we have 43 countries and 41 industries that provide 474,038 firm-year observations. As many as 49,370 unique firms enter our

sample at least once.[1]

Each year in each country, we categorize the sample companies into two groups by the sign of their FCF for that year. FCF is computed as: net income before extraordinary items and preferred dividends (IB) *plus* depreciation, depletion, and amortization (DP) *minus* capital expenditure (CAPX), *over* total assets (AT) (i.e., (IB + DP – CAPX) / AT). If the capital expenditure data is missing, we treat it as zero. The capital expenditure is the lower bound of corporate investment because most investment in intangible assets is expensed rather than capitalized and thus reduces CF in the first place (see, for example, Peters and Taylor (2017)).

Table 1 shows the list of 43 countries along with the average number of sample companies and the fraction of negative-FCF firms therein. Approximately 14.7% of the sample firms are from the U.S., followed by Japan that accounts for nearly 13.5% of the sample. As such, the sample is uneven but correctly reflects the way that the global capital markets are composed of. Also, most of our analysis examining cross-country patterns use the same number of observations from each country; thus, this imbalance in the panel does not affect the results. In the table, we also include the legal origin information, which is from La Porta, Lopez-de-Silanes, and Shleifer (2008). An * mark next to the legal origin denotes the ones that are disputed as "mixed" by Klerman, Mahoney, Spamann, and Weinstein (2011). Four countries are marked, and we ensure that our results are not sensitive to them.

Figure 1 separately shows the average fraction of negative-FCF firms in each country. With just two exceptions, negative-FCF firms are in the minority in each country; still, they account for as much as 22% to 48% of the country's sample. The two exceptions are Australia and Canada, each having the negative-FCF firms represent 68% and 73% of their samples, respectively. The main message in Table 1 and Figure 1 is that negative-FCF firms constitute a meaningful subset in the country's corporate sector surpassing the critical mass by any reasonable standards. Given their unquestionable presence, negative-FCF firms must be operating under a set of institutions that address their own needs and problems.

3.2. Summary statistics – FCF and firm value

Table 2 reports summary statistics on FCF and firm value (Tobin's q), each of which is winsorized at the 1 and 99 percentiles in each country separately for positive- and negative-FCF firms. The first row shows that FCF is still widely distributed from –502.9% to 89.5% of total assets. The second row is for

[1] We obtained the industry information from:
https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_48_ind_port.html.
We intentionally drop one Turkish company from the sample (Worldscope company code 27743TD), as its total assets change dramatically, from 610,175,184.58 in 1991 to 561.72 in 1992 and then to 516,504,061.49 in 1993. This seems an obvious error but, instead of artificially correcting the numbers, we exclude the company from the sample.

the 0/1 dummy variable for negative-FCF firm-year observations ($D_{\text{neg-FCF firms}}$). Its mean value of 0.41 indicates that 41% of our pooled sample are negative-FCF firm-year observations. The third row is for firm value measured by theTobin's q ratio, which is computed as: book value of total assets (AT) *plus* market value of common equity (MKTCAP) *minus* book value of common equity (CEQ), *over* book value of total assets (AT) (i.e., (AT + MKTCAP – CEQ) / AT). For the companies outside the U.S., MKTCAP is the data item "MV" in Datastream/Worldscope. For the U.S. firms, it is the product of the number of common shares outstanding (CSHO) and the year-end closing price (PRCC_F) from Compustat. Like FCF, q is also broadly distributed between 0.10 to 183.98.

To facilitate statistical analysis, we put both FCF and Tobin's q in log. With positive FCF, it is straightforward to compute *ln*(FCF). With non-positive (i.e., including zero) FCF, we compute $-ln(-FCF^*)$, in which FCF^* is the original FCF moved left by the minimum FCF in absolute terms among negative FCF in the country. For example, if a country's closest-to-zero FCF among negative FCF is, say, –0.0001, all non-positive (i.e., including zero) FCF values are moved to the left by 0.0001. That way, we avoid putting zero FCF in log. In general, log transformation ensures that extreme values at both ends are mitigated and non-extreme ones are spread out for meaningful variation. The two figures below visualize this effect.

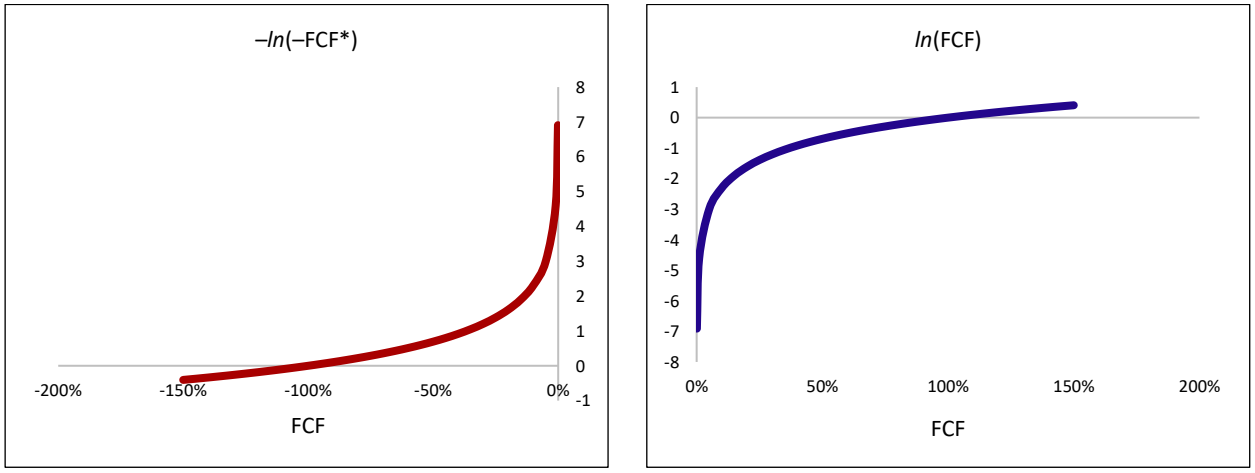

Figure 2 reports the actual data transformation, from Panel A to Panel B. Note the flipping of the sign. More precisely, negative FCF becomes positive as $-ln(-FCF^*)$, and positive FCF becomes negative as *ln*(FCF). This does not affect our analysis at all, because we conduct analysis within each group. Henceforth, we use *LN_FCF* to denote both *ln*(FCF) for positive FCF and $-ln(-FCF^*)$ for negative FCF.

Figure 3, Panel A, shows the log transformed Tobin's q and its distribution. Just like FCF, the log transformation alleviates outliers while creating sufficient dispersion among normal values. Another noteworthy observation in the figure is that the positive-FCF and negative-FCF firms are not different

in terms of the Tobin's q in log. This observation thus ensures that our comparison between positive-FCF and negative-FCF firms is not a sideshow of a comparison between low-q and high-q companies.

Panel B of Figure 3 shows the distribution of log-transformed firm size (i.e., total assets in log). Unlike Tobin's q, there is a nuanced size tilt with relation to the sign of FCF: negative-FCF firms tend to be a tad smaller than positive-FCF firms. For a closer look, we sort all (i.e., both positive- and negative-FCF) sample firms into quintiles by their total assets, each year in each country, and then report the fraction of the size quintiles in each of the pooled FCF-sorted subsamples.

Panel C of Figure 3 shows the resulting look at the size tilt of the FCF-sorted subsamples. Nearly half of the positive-FCF firms are from the top two size quintiles (22% + 24% = 46%) and the bottom two size quintiles have a relatively smaller presence (15% + 18% = 33%). In the group of negative-FCF firms, it is the opposite to a similar degree. Specifically, the top size quintiles account for 31% and the bottom two size quintiles represent 50%. In Section 6, we conduct an in-depth analysis to gauge the role of firm size in our results. This robustness check is critical because prior studies have reported greater cross-country differences with small firms (e.g., Beck, Demirguc-kunt, and Maksimovic 2005; Knack and Xu 2017).

3.3. Summary statistics – FCF beta

Using the log-transformed FCF and q, we estimate the FCF beta separately for positive-FCF and negative-FCF firms. Specifically, we estimate the following country-by-country equation.

$$\ln(q_{k,t}) = \alpha + \beta \times LN\_FCF_{k,t} + \sum(\delta^t \times Y) + \varepsilon_{k,t}, \quad (1)$$

where $\ln(q_{k,t})$ is the natural log of firm k's q ratio in year t, $LN\_FCF_{k,t}$ is the log-transformed FCF of firm k in year t (see Section 3.2 for details), and Y's are a set of year fixed effects.

Table 3 shows, consistent with our hypothesis detailed in the Introduction, that FCF is positively related to firm value among positive-FCF firms and that their cross-sectional relation flips to negative among negative-FCF firms. Across the 43 sample countries, the minimum FCF beta among positive-FCF firms is 0.091 and the maximum is 0.282. In other words, in each and every country, the FCF beta is positive among positive-FCF firms. In sharp contrast, the FCF beta among negative-FCF firms ranges from –0.294 to –0.006 across countries, meaning that the FCF beta among negative-FCF firms is always negative.

Figure 4 visualizes this striking result. Another noteworthy pattern in the table and figure is that

the FCF beta distribution is wider for negative-FCF firms than for positive-FCF firms. The cross-country standard deviations of the FCF beta compare as 0.044 for positive-FCF firms vs. 0.071 for negative-FCF firms. The interquartile range also differs: 0.063 for positive-FCF firms vs. 0.108 for negative-FCF firms. We conclude this section by stressing that the sign-matching between FCF and FCF beta is *not* a hard-wired result.[2] On the contrary, this stark contrast in FCF beta between positive-FCF and negative-FCF firms indicates that the two groups of companies work in polar opposite institutional environments to the extent that the FCF beta is formed by the surrounding institutions.

4. Baseline empirical results

Our first baseline analysis is to see whether the cross-country variation in firm value is different between positive-FCF and negative-FCF firms. Specifically, we examine whether the "systematic" dispersion in firm value across countries is observed both with positive-FCF and negative-FCF firms, or only with one of them. This is the topic for Section 4.1. We then repeat the analysis with FCF beta in lieu of firm value, and report the results in Section 4.2.

4.1. Firm value

To conduct our analysis, we need a measure of firm value that is unique to a given country, so that its cross-country variation is truly attributable to countries. The measure also needs to be computed over a subset of companies—either positive-FCF firms or negative-FCF firms—in the country. The following equation satisfies both requirements.

$$\ln(q_{k,t}) = \alpha + \sum(\alpha^C \times C) + \sum(\delta^t \times Y) + \varepsilon_{k,t}, \quad (2)$$

where $\ln(q_{k,t})$ is the natural log of firm k's q ratio in year t, C's are a set of country fixed effects, and Y's are a set of year fixed effects. We restrict $\Sigma\alpha^C$ and $\Sigma\delta^t$ to be equal to zero, respectively, to avoid multicollinearity (see, e.g., Bae, Chan, and Ng (2004)). This specification uses the global average as benchmark, which is captured by the intercept term (α), and allows α^C's to measure each country's unique corporate valuations relative to the global average. It is a panel regression that utilizes a larger number of observations and thus reduces the effects of outliers. We estimate Eq. (2) separately for positive-FCF and negative-FCF firms.

[2] Some studies also report similar results. See, for example, Lee, Shin, and Stulz (2021) and Choi and Lee (2021).

By construction, the country-specific valuation estimated here is on average zero across the global average valuation and it is a percentage difference from the global average as a log return. For example, an estimate of 0.2 means that the country's valuation is the global average *times* $e^{0.20}$, which is approximately 22% higher than the global average ($\alpha \cdot e^{0.20} \approx 1.22\alpha$). It is correct to use the log return here, because it ensures symmetry between above and below the global average.

Table 4, Panel A, reports the summary statistics on the country-specific firm value estimates. We also report the global average for each subsample, which is 0.276 for positive-FCF firms ($e^{0.276} \approx$ Tobin's q ratio of 1.32) and 0.223 for negative-FCF firms ($e^{0.223} \approx$ Tobin's q ratio of 1.25). The variation occurs around the respective global average and thus we discuss the results by focusing on the summary statistics that are divided by the corresponding global average. Just like the FCF beta, the country-specific firm value is also more widely dispersed when it is estimated with negative-FCF firms than with positive-FCF firms. The range of the 43 country-specific firm value for positive-FCF firms (after adjusted for their global average) is 3.106 while that of negative-FCF firms is 3.912. Thus, the cross-country variation is approximately 25% higher for negative-FCF firms. With the interquartile range, the contrast is 0.640 for positive-FCF firms vs. 0.967 for negative-FCF firms. That is, the cross-country variation is more than 50% larger for negative-FCF firms.

To see any "systematic" dispersion in country-specific valuation, we associate those valuation estimates with their corresponding legal origins, with the country's per-capita GDP in log as a control (average over 2000-2018). All GDP data except for Taiwan are obtained from The World Bank (https://data.worldbank.org/indicator/NY.GDP.PCAP.KD). The data for Taiwan are from the country's National Statistics web-site (https://eng.stat.gov.tw). We would be remiss if we included an array of country-level institutional characteristics in the regression, because the premise here is that most of those institutions stem from legal origin or what the legal origin proxies for.

Panel B of Table 4 reports the regression results. Beginning with the top part of the panel, country-specific firm value cleanly lines up with legal origin (i.e., higher valuations in common law countries) only when the country-specific valuation is estimated with negative-FCF firms. With positive-FCF firms, in contrast, the well-known link between legal origin and firm value is missing. To the extent that legal origin is a reasonable proxy for a country's institutions and their effectiveness and that firm value is an outcome of those institutions, this result indicates that the institutions for negative-FCF firms create a difference across countries, but not the institutions for positive-FCF firms. When we limit the analysis to common law and French civil law countries (bottom part of Panel B), the average firm value is different between the two legal origins even with positive-FCF firms. However, it is only marginally significant with a p-value of 0.067. Further, the results is much sharper for negative-FCF firms with a p-value of 0.003.

4.2. FCF beta

We have already reported the FCF in Section 3.3. To be consistent with our firm value analysis in the preceding section, we re-estimate the FCF using the panel regression, which is:

$$\ln(q_{k,t}) = \alpha + \beta \times LN\_FCF_{k,t} + \sum(\alpha^C \times C) + \sum(\beta^C \times LN\_FCF_{k,t} \times C) + \sum(\delta^t \times Y) + \varepsilon_{k,t} \quad (3)$$

where $\ln(q_{k,t})$ is the natural log of firm k's q ratio in year t, $LN\_FCF_{k,t}$ is the log-transformed FCF of firm k in year t (see Section 3.2 for details), and C's and Y's are a set of country fixed effects and year fixed effects, respectively. We restrict $\Sigma\alpha^C$, $\Sigma\beta^C$, and ΣY_t to be equal to zero, respectively, to avoid the multicollinearity problem. This equation allows countries to have different FCF betas (β^C's) as well as different intercepts (α^C's). The intercept, α, and the coefficient on FCF itself, β, is the common for all countries. Therefore, a country's FCF beta is the sum of β and β^C. We use this sum in the ensuing analysis to correctly see whether a country's FCF beta is positive or negative. The resulting FCF beta is virtually identical to that one in Section 3.3: their correlation coefficient is 0.99. An infinitesimal difference than the FCF beta from the country-by-country regression is because the panel regression is estimated on an unbalanced dataset (see, e.g., Greene (2000; p.566-567)).

Table 5 reports a clear pattern in the relation between the FCF beta and legal origin. Namely, with negative-FCF firms, the FCF beta is more negative in common law countries than in (French) civil law countries. In contrast, the positive FCF beta among positive-FCF firms are similar across legal origins. To the extent that legal origin is a reasonable proxy for a country's institutions and their effectiveness and that the FCF beta is formed by those institutions, the result here is a strong indication that the cross-country difference in institutions is concentrated in those for negative-FCF firms—i.e., the growth-fostering institutions.

4.3. Firm value and FCF beta

Is it really true that firm value and FCF beta are a product of the surrounding institutions? While there is conceptual foundation for this premise, we conduct an analysis that can lend additional support. Specifically, we predict that to the extent that firm value and FCF beta are a product of the *common* surrounding institutions, the two should be correlated with each other. Further, the correlation

between firm value and FCF beta should be stronger among negative-FCF firms given the earlier results. Below we test these empirical implications.

Table 6 reports the test results. Consistent with the prediction, the country-specific firm value and the country-specific FCF beta are indeed correlated with each other, and this correlation is stronger when both are estimated with negative-FCF firms. Moreover, this correlation is negative, meaning that the country-specific valuation is higher when the FCF beta is more negative. On the other hand, the correlation between the country-specific firm value and the country-specific FCF beta is positive with positive-FCF firms. However, this correlation is mostly weak or insignificant.

5. Country vs. Industry

We explain the "no result" with positive-FCF firms as follows. Companies with positive FCF have various firm-level and industry-wide—i.e., non-country-specific—institutions that can assure outside investors of the proper use of internal funds by corporate insiders. That is, positive FCF can find its way to firm value via non-country-specific channels; consequently, country-level resources-policing institutions do not stand out in the cross-section in valuation across countries. This line of reasoning also implies that country-level institutions dominate firm-level or industry-wide ones in terms of fostering corporate growth.

We test these empirical implications by directly quantifying the relative importance between country-specific factors and industry-specific factors—along with firm-specific components—in our metrics. We begin with FCF and proceed to firm value. When examining firm value, we take into account the different FCF betas across countries and industries.

5.1. Country vs. Industry effects in FCF

To assess the country-specific factors ("country effect") and industry-specific factors ("industry effect") in FCF, we estimate the following equation each year, separately for positive-FCF and negative-FCF firms:

$$LN\_FCF_{k,t} = \alpha + \sum(\alpha^C \times C) + \sum(\alpha^I \times I) + \varepsilon_{k,t} \quad (4)$$

where $LN\_FCF_{k,t}$ is the log-transformed FCF of firm k in year t (see Section 3.2 for details), C's and I's are a set of country and industry fixed effects, respectively. As always, we restrict $\Sigma\alpha^C$ and $\Sigma\alpha^I$ to be

equal to zero, respectively, to avoid multicollinearity. Note that we estimate this equation each year; hence, no year fixed effects. This year-by-year estimation leads to a set of α^C's and α^I's for each year. A given year's average country effect is then: $CE_t^{avg} = \sum CE_t^C / nc_t$, where $CE_t^C = |\alpha_t^C|$ and nc_t is the number of countries in year t. Similarly, a given year's average industry effect is: $IE_t^{avg} = \sum IE_t^I / ni_t$, where $IE_t^I = |\alpha_t^I|$ and ni_t is the number of industries in year t.

Figure 5 shows the resulting country effects and industry effects, separately for positive and negative FCF. Clearly, the country effects are greater than the industry effects in negative FCF *and only in* negative FCF. Specifically, the country effects are approximately 0.4 while the industry effects are 0.3 for negative FCF. These estimates translate to FCF being 49% ($e^{0.4} \approx 1.49$) and 35% ($e^{0.3} \approx 1.35$) higher or lower than the global average due to country- and industry-specific factors, respectively. In contrast, both the country and industry effects in positive FCF are in the order of 0.2 or 22% ($e^{0.2} \approx 1.22$).

To determine the statistical significance of the difference between the two effects, we estimate the following equation:

$$E_{t,c/i} = a + b \times D_{CE} + \sum(\delta^t \cdot Y) + \varepsilon_{t,c/i} \ , \qquad (5)$$

where E is a stack of the country effects (i.e., CE^C) and industry effects (i.e., IE^I) in year t, D_{CE} is a dummy variable that takes the value of 1 when the effect is a country effect. In this setup, the coefficient on D_{CE} is the mean difference between the country effect and the industry effect. We control for year fixed effects, and allow error terms to cluster within the same country or within the same industry.

Table 7, Panel A, shows that the difference between the country effect and the industry effect in negative FCF is significant at the 10% level, with a p-value of 0.067. In contrast, the difference is insignificant for positive FCF with a p-value of 0.440. The results clearly support our conjecture, which is that companies with positive FCF have active industry-wide institutions that allow positive FCF to contribute to firm value via non-country-specific channels. The results are also consistent with country-level institutions dominating industry-wide ones in negative FCF (i.e., for growth-fostering purposes).

Figure 6 turns to firm-specific factors in FCF by reporting one minus the R-squared of Eq. (4) above. The equation's goodness of fit is driven by the commonality in FCF—be it country-specific or industry-wide—and thus the flip side (i.e., 1 – R-squared) quantifies the firm-specific factors in FCF. It is a widely accepted measure of idiosyncratic volatility in the literature (e.g., Lee and Liu 2011; Lee 2015). As shown in the figure, firm-specific components are the dominant factor in positive FCF, accounting for nearly 90% of its total variation. While negative FCF also has large firm-specific components, they are in the order of 70% of the total variation and pale in comparison with those in

positive FCF.

5.2. Country vs. Industry components in firm value

We repeat the analysis with firm value to verify whether there are stronger country effects than industry effects in the firm value of negative-FCF firms but not in the firm value of positive-FCF firms. For this verification, we estimate the following equation in order to take into account different mean levels and FCF betas across countries and industries:

$$\ln(q_{k,t}) = \alpha + \beta \times LN\_FCF_{k,t} + \sum(\alpha^C \times C) + \sum(\alpha^I \times I) + \sum(\beta^C \times LN\_FCF_{k,t} \times C) + \sum(\beta^I \times LN\_FCF_{k,t} \times I) + \varepsilon_{k,t} \quad (6)$$

where $\ln(q_{k,t})$ is the natural log of firm k's q ratio in year t and $LN\_FCF_{k,t}$ is the log-transformed FCF of firm k in year t (see Section 3.2 for details),while C's and I's are a set of country and industry fixed effects, respectively. We restrict $\Sigma\alpha^C$, $\Sigma\alpha^I$, $\Sigma\beta^C$, and $\Sigma\beta^I$ to be equal to zero, respectively, to avoid the multicollinearity problem. This equation allows both countries and industries to have different FCF betas (β^C's and β^I's) as well as different intercepts (α^C's, α^I's). Thus, a given country's uniqueness compared to other countries, while industry effects are controlled, is captured by α^C and β^C together. That is, this country's uniqueness in year t is measured by $CE_t^C = |\alpha_t^C| + |\beta_t^C|$, and a given year's average country effect is $CE_t^{avg} = \sum CE_t^C / nc_t$, where nc_t is the number of countries in year t. Similarly, a given year's average industry effect is $IE_t^{avg} = \sum IE_t^I / ni_t$, where $IE_t^I = |\alpha_t^I| + |\beta_t^I|$ and ni_t is the number of industries in year t.

Figure 7 shows the result. It is indisputable that only the valuation of negative-FCF firms has much stronger country effects than industry effects. A difference from Figure 5 is that there is a time-varying (partial) convergence and divergence between the country and industry effects in firm value. This is understandable given the larger volatility in market valuation than in accounting measure. Regardless, in negative FCF, the country effects are consistently higher than the industry effects.

Table 7, Panel B, then reports the statistical significance of the observed difference. We continue

to use the specification of Eq. (5) while replacing the country and industry effects in FCF with those in firm value. As expected, the difference between the country effects and the industry effects is highly significant with a p-value of 0.001 in the valuation of negative-FCF firms. Also as expected from the figure, the difference between the two effects in the valuation of positive-FCF firms is insignificant with a p-value of 0.982.

6. Role of firm size

We now gauge the role of firm size in our results. To this end, we take two approaches. One is to compare small firms with larger ones, instead of comparing negative-FCF with positive-FCF firms. The other approach is to keep comparing negative-FCF firm with positive-FCF firms while adjusting their compositions by firm size.

6.1. Size-sorted subsamples

Each year in each country, we sort sample firms into two groups with the median total assets as the cutoff. We then examine the two size-sorted subsamples' country-specific valuation and FCF beta using Eq.'s (2) and (3), respectively.

Figure 8, Panel A, reports the results. The left figure shows that, in terms of valuation, small firms show greater variation across countries than large firms. Certainly, this figure is created after we scale the estimated country-specific valuation of each size group by their corresponding global averages (0.293 for small firms and 0.230 for large firms). The FCF beta in the right figure shows that, for both small and large firms, the FCF beta is close to zero on average and, if any, the FCF beta of small firms is slightly higher than that of large firms. Except for the obvious outliers, the two size-sorted subsamples show similar cross-country variation as well. These patterns in the right panel make a sharp contrast with the FCF-sorted subsamples whose results are reported in Figure 4. To wit, there is a clear distinction between negative-FCF and positive-FCF firms, as the former shows a wider cross-country variation than the latter and, more importantly, the negative-FCF firms have a negative FCF beta while the positive-FCF firms have a positive FCF beta. Those opposing signs of the FCF beta are at the core of our hypothesis. Therefore, the observed patterns in the right figure of Panel A, Figure 8, indicate that our hypothesis and the supporting evidence in the preceding sections are *not* a firm size-related result.

Panel B of Figure 8 helps understand the indeterminate, near-zero FCF beta of the size-sorted subsamples. The left figure shows that small firms are almost equally divided between positive-FCF and negative-FCF firms, whose opposing FCF betas must be offsetting within the small-firm subsample. The right figure shows that the same is happening in the large-firm subsample albeit to a lesser degree.

About one third of big firms have negative FCF and thus the large-firm subsample also experiences the neutralization of FCF beta.

Table 8 repeats the analysis in Section 4 with the size-sorted subsamples (instead of the FCF-sorted subsamples). Panel A is for the country-specific firm value, Panel B for the country-specific FCF beta, and Panel C for the relation between the two. The key message stemming from the three panels is that our earlier results with the FCF-sorted subsamples are not generated by the size-sorted subsamples. More specifically, while there is no difference in the valuation of large firms across countries (Panel A), the FCF beta of those big firms shows a systematic cross-country variation in a way that common law countries have more *negative* FCF beta (Panel B). Even more puzzling, the country-specific firm value and the country-specific FCF beta are negatively correlated with each other in *both* small and large firms (Panel C). The moral of these results is plain and simple: our hypothesis does not work for small and large firms and it goes through only with the FCF-sorted subsamples.

6.2. Size-adjusted FCF-sorted subsamples

The idea behind our second approach is to use firm size in adjusting the compositions of the FCF-sorted subsamples and to see whether this adjustment sharpens the results. It is plausible that resources policing is more relevant for large firms than smaller ones, because the resources to monitor in large firms are, *ceteris paribus*, larger than in smaller-size firms. Similarly, growth seems more suitable for small firms, because they have more room for getting bigger (i.e., growth), again *ceteris paribus*. We thus exclude the smallest quintile firms from positive-FCF firms, and the largest quintile firms from negative-FCF firms. If the results become stronger, it would mean that size matters. As in the previous section, we repeat the analysis in Section 4 with these size-adjusted FCF-sorted subsamples.

Table 9 reports the results. We begin with the results for positive-FCF firms. In Panel A, there is an "improvement" in the adjusted FCF-sorted subsamples. Specifically, compared to the results in Table 4 (Panel B), now the cross-country variation in country-specific firm value is completely insignificantly related to the common law dummy variable in the size-adjusted positive-FCF firm group. Moving on to Panel B for country-specific FCF beta, the results are virtually the same as those in Table 5. Finally, Panel C shows that the link between firm value and FCF beta becomes highly significant for positive-FCF firms after the size adjustment. Turning to the results for negative-FCF firms, the size adjustment causes virtually no change in the results across the three panels.

Overall, the results suggest that the size adjustment helps sharpen the channels in which the resources-policing institutions work, but not the ways that the growth-fostering institutions operate. That is, the notion of resources policing is more suitable for big firms than smaller-size ones, although growth fostering is not necessarily contingent on firm size. As a result, the two outcomes of the resources-policing institutions—firm value and FCF beta of positive-FCF firms—are more closely related to each other in the size-adjusted positive-FCF firms (Panel C, Table 9). However, this size

adjustment towards bigger firms also means a proportional increase in the role of industry and firm-specific factors. For example, it is well-known that financial analysts follow large firms and produce industry-wide information (e.g., Piotroski and Roulstone 2004; Lee and So 2017). Also well-established is that large firms are more idiosyncratic than small firms (e.g., Roll 1988). Consequently, industry-wide and firm-specific governance schemes continue to overshadow country-specific resources-policing institutions, as a result of which the cross-country variations in firm value (Panel A) and FCF beta (Panel B) are each insignificantly related to country-level institutions (proxies by the legal origin). In sum, while firm size helps sharpen the resources-policing institutions, only the FCF can correctly identify the growth-fostering institutions.

7. Dynamics of FCF

The premise of this paper is that the corporate sector consists of two disparate groups of companies as identified by the sign of their FCF and they work in different institutional environments. Put differently, a firm's FCF is shaped up by—and thus reveals—its surrounding institutions. Negative FCF in particular is premised to be a sign of externally verified growth prospects in a well-functioning growth-fostering environment. Conversely, absent effective growth-fostering institutions, negative FCF would be stigmatized and discouraged. An empirical prediction stemming from this premise is the dynamics of FCF. Specifically, we predict that: (1) in the first place, or unconditionally, negative FCF is more likely in countries with better growth-fostering institutions and (2) conditional on negative FCF in a given year, another negative FCF next year is more likely in countries with more effective growth-fostering institutions.

To test those predictions, we compute the unconditional probability of negative FCF in each year for each country, using the fraction of negative-FCF firms in the country's sample for the year. For conditional probability, we keep track of each sample firm over time and code whether the firm has negative FCF two, three, or four years in a row. We then compute the fractions of those incidences in a country's sample each year and, using those fractions, Prob(FCF_t<0 | FCF_{t-1}<0), Prob(FCF_t<0 | FCF_{t-1}<0 & FCF_{t-2}<0), and Prob(FCF_t<0 | FCF_{t-1}<0 & FCF_{t-2}<0 & FCF_{t-3}<0).

Table 10, Panel A, reports the results by averaging each probability over countries in the same legal origin and across years. Both the unconditional and conditional probabilities of negative FCF are higher in common law countries than in civil law countries. For example, the unconditional probability of negative FCF in common law countries is 0.418, whereas that in French civil law countries is 0.320. Also, the probability of the fourth negative FCF after three consecutive years of negative FCF is 0.769 in common law countries, while it is 0.697 in French civil law countries. To the extent that the legal origin is a valid proxy for a country's institutions and their effectiveness, the results support our predictions.

To determine the statistical significance of the observed differences across legal origins, we regress

each probability (pooled across countries and years) on a dummy variable for common law countries, the country's per-capita GDP in log (average over 2000-2018), and a set of year fixed effects. We then report the p-value of the common-law dummy variable, for which the error terms are allowed to cluster within the same country. Panel A, the bottom table, shows that the differences in probability across legal origins are always significant with a p-value ranging from 0.023 to 0.001.

Panel B of Table 10 looks at the FCF dynamics from another angle by reporting the transition matrix between positive and negative FCF in two consecutive years. While one of the four entries—Prob(neg FCF_0 | neg FCF_{-1})— is already reported in Panel A, what we additionally see in Panel B is the persistence of FCF in *both* signs. The probability of positive FCF, conditional on positive in the previous year, is as high as 0.798 in common law countries. It is even *higher* at 0.818 and 0.826 in civil law and French civil law countries, respectively. Together with the already observed conditional probability of negative FCF, which ranges from 0.610 to 0.696, the transition matrix confirms our premise that there are two very distinct groups of companies in corporate sector and they can be identified by the sign of their FCF.

The bottom table of Panel B is for the statistical significance associated with the transition matrix. There are only two p-values, because two possible outcomes following a certain type of FCF are the mirror images of each other. For example, the bottom-left entry in the table—i.e., the p-value of 0.001 for the difference between common law and civil law countries—means that, in common law countries, negative FCF is more likely to remain negative, or equivalently, less likely to turn positive than in civil law countries. This difference is robust to focusing on French civil law countries as the p-value is 0.003. The other two p-values are 0.148 for common law vs. civil law countries, and 0.043 for common law vs. French civil law countries. It thus follows that, in common law countries, positive FCF is *less* likely to remain positive and *more* likely to turn negative, although the difference is significant only against French civil law countries. Again, to the extent that the legal origin is a valid proxy for a country's institutions and their effectiveness, the results suggest that country-level institutions matter more for negative FCF than for positive FCF.

Figure 9 reiterates the main message of this section. In all three legal origins (Panels A through C), both positive FCF and negative FCF are persistent or, equivalently, sign changes in FCF are relatively rare. What significantly differs across legal origins is that negative FCF is more persistent in common law countries than in (French) civil law countries and it is—we argue—because of the difference in their growth-fostering institutions. While the persistence of positive FCF (which is supported by the resources-policing institutions) also differs across legal origins, the statistical significance is not as strong.

8. Identifying hypothesized institutions

Finally, we seek to identify the hypothesized resources-policing and growth-fostering institutions. To

this end, we utilize existing measures of country-level institutions. The idea is to gauge the ability of various measures that quantify different aspects of a country's institutions to replicate the observed effects. Their relative abilities, then, reveal the nature and characteristics of the resources-policing and growth-fostering institutions. In a sense, this approach treats the existing measures as if they were the subindices of the legal origin, so that we can discover what aspects of the legal origin have created the results in the preceding sections. Certainly, an important part of our analysis here is to see whether those measures are mostly unrelated to the metrics of positive-FCF firms, or they are related to the metrics of positive-FCF firms in opposite directions thereby offsetting one another in the "composite" index like the legal origin.

8.1. via Doing Business Indicators

We first employ the World Bank's Doing Business Indicators (DBIs).[3] Each of the 10 DBIs cover the following topics:

1. Dealing with construction permits
2. Enforcing contracts
3. Getting credit
4. Getting electricity
5. Paying taxes
6. Protecting minority investors
7. Registering property
8. Resolving insolvency
9. Starting a business
10. Trading across borders

The overall index is called "Ease of doing business". Their availability in time-series is different from one country to another. Thus, we first average each DBI within a country over our study period (2000-2018), and then standardize each DBI using the cross-country mean and standard deviation. Finally, we regress each of the standardized DBIs on the FCF beta estimated by Eq. (3). We choose to use a univariate cross-country regression, instead of a multivariate one, because of the high correlation among the DBIs. The regressions are estimated separately for positive-FCF and negative-FCF firms.

Figure 10 shows the resulting regression coefficients and t-statistics. Indeed, a higher score of each DBI is associated with a more negative FCF beta for negative-FCF firms and, instructively, those

[3] We obtained the DBIs information from:
https://databank.worldbank.org/source/doing-business.
For each indicator, we chose the version (i.e., methodology) that most coincides with our study period of 2000-2018. For example, we chose the "Enforcing Contracts" indicator based on the 04-15 methodology instead of 17-20 methodology.

associations vary across the DBIs. More precisely, the DBI for "Starting a business" has the largest coefficient of -0.039 with a t-statistic of -3.29, and several other DBIs—including "Getting credit" and "Paying taxes"—are also highly correlated with the FCF beta of negative-FCF firms. In contrast, "Getting electricity" is insignificant, both economically and statistically. "Enforcing contracts" and "Protecting minority investors" are certainly significant but they are not the primary driver of the results. Equally noteworthy is that none of the DBIs are significantly related to the FCF beta of positive-FCF firms, except for "Getting credit". The result thus lends additional support for our argument that positive-FCF and negative-FCF firms are operating under different clusters of institutions at the country level and that the cross-country difference in institutions are more pronounced with negative-FCF firms.

The preceding section (Section 7) offers another handy outcome of the hypothesized institutions, against which the DBIs can be examined. The probability of negative FCF has been found to increase with the quality of a country's institutions as proxied by the legal origin. Thus, we can unpack this relation using the DBIs. A crucial checkpoint is the pattern above across the DBIs in relation to the FCF beta. If the hypothesized growth-fostering institutions are responsible for this pattern, then a similar pattern across the DBIs should be observed with the probability of negative FCF. For this analysis, we estimate the univariate cross-country regression, using the unconditional and the conditional probability of negative FCF (i.e., Prob(FCF_t<0) and Prob(FCF_t<0 | FCF_{t-1}<0)) as dependent variable, one at a time.

Figure 11, top Panel A, shows that several DBIs are significantly related to the probability of negative FCF. More precisely, the DBIs for "Starting a business", "Getting credit", "Paying taxes", and "Protecting minority investors" turn out to be most important. These are exactly what we find to be highly associated with the FCF beta of negative-FCF firms. The two findings combined thus assure the existence of a common set of institutions for both metrics, which we refer to as the growth-fostering institutions.

Another observation merits further discussion. While the DBI for "Getting credit" is significant both for the unconditional and the conditional probabilities, the other three DBIs are significant only for the conditional probability (bottom Panel A). Thus, the DBIs for "Starting a business", "Paying taxes", and to a lesser extent "Protecting minority investors" represent the institutions that allow negative FCF to continue as the corporate growth prospect is externally verified and funded for another year.

Panel B of Figure 11 compares the above result with the one for the conditional probability of positive FCF. This is to confirm that the DBIs are unrelated to the outcomes of positive-FCF firms, this time in the form of the conditional probability of positive FCF. None of the DBIs are significant. Again, the result reconfirms that positive-FCF and negative-FCF firms are operating under different clusters of institutions at the country level and that the cross-country difference in institutions is present only in those for negative-FCF firms.

8.2. via Worldwide Governance Indicators

As a robustness check, we substitute the World Bank's Worldwide Governance Indicators (WGIs) for the bank's DBIs.[4] This replacement has a good motivation. The DBIs focus on the efficiency of government policies and regulations from the perspective of small and medium-size companies. Thus, one could consider those indicators to be relevant particularly for negative-FCF firms and their growth-fostering institutions. The WGIs, on the other hand, quantifies "the traditions and institutions by which authority in a country is exercised" (quoted from the WGI's *frequently asked questions* section), which is a broad concept applicable to any company operating in the country. Thus, there is no reason to think that WGIs are more relevant to one set of companies than the other. Each of the six WGIs covers:

1. Control of Corruption
2. Government Effectiveness
3. Political Stability
4. Rule of Law
5. Regulatory Quality
6. Voice and Accountability

Some of the WGIs are frequently used as a measure of property rights institutions. For example, Lin, Mihov, Sanz, and Stoyanova (2019) do so with three of them ("Control of Corruption", "Rule of Law", and "Voice and Accountability"). Here, we use each of the six WGIs to repeat the analysis in Section 8.1.

Figure 12 reports the results. Panel A is the repeat of Figure 10 using the WGIs instead of DBIs. Again, each of the WGI is significantly and negatively related to the FCF beta of negative-FCF firms. That is, a higher score of the WGI is associated with a more negative FCF beta of negative-FCF firms. Also as in the previous results with the DBIs, none of the WGI is related to the FCF beta of positive-FCF firms. Panels B and C are the repeats of Figure 11. Specifically, Panel B shows that the WGIs are related to the conditional probability of negative FCF in a strikingly similar way to Panel A, pointing to a common set of institutions for the two outcome measures. Finally, Panel C reports that the probability of positive FCF is unrelated to the WGI, except for "Voice and Accountability". The difference in conditional probability between positive and negative FCF cannot be obvious, further attesting that positive-FCF and negative-FCF firms work under different sets of institutions.

[4] We obtained the WGIs information from: https://datacatalog.worldbank.org/search/dataset/0038026/Worldwide-Governance-Indicators.

9. Conclusions

The persistent coexistence of two distinct groups of companies in the corporate sector—i.e., positive-FCF firms and negative-FCF firms—is a robust empirical regularity across countries. Such a sustained cohabitation, together with the conceptual contrast between positive FCF and negative FCF, suggests that a country has different sets of institutions serving each group of companies. That is, a country's institutions for corporations can be unbundled into those for positive-FCF firms and those for negative-FCF firms. This is our main argument, and we refer to the former as the resources-policing institutions and the latter as the growth-fostering institutions.

Is this unbundling necessary or useful? Institutions matter because they affect economic outcomes, so we ask which one between the two hypothesized institutions affects a country's economic outcome in a way that the country gets ahead or lags behind others. Put differently, we ask whether the two types of institutions are equally related to the cross-country difference, or one is more relevant than the other. Using firm-level data from 43 countries for the period of 2000-2018, we find that only the growth-fostering institutions are related to the variation in corporate performance across countries. Conversely, the resources-policing institutions are virtually unrelated to the cross-country dispersion in corporate performance. We further show that this last result is not because country-level resources-policing institutions are absent or weak but because non-country (i.e., industry-wide and firm-specific) institutions are at least as active.

We conclude the paper by discussing our results in relation to property rights institutions and contracting institutions. Section 8 of this paper suggests that both types of institutions matter for negative-FCF firms (e.g., "Paying taxes" and "Enforcing contracts"), meaning that the growth-fostering institutions are a combination of both. Section 8 also shows that neither matter for positive-FCF firms in the sense that resources policing is also accomplished "outside the country" (i.e., via industry-wide or firm-specific arrangements). Our paper thus sheds light on an aspect of the state that has yet to be fully recognized. With a monopoly on legalized coercive power, the state can play a dual role: namely, supporting and monitoring. Our results point to the importance of the state's supporting role and the need for a strong state in order for it to be an effective helping hand. However, the state does not need to be strong in the name of monitoring. This seeming ambivalence is in fact well in line with the notion of "consensually strong state equilibrium" of Acemoglu (2005).

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Table 1. Sample countries

This table shows the list of 43 countries along with the average number of sample companies and the average fraction of negative-FCF firms therein. We also report each country's legal origin (from La Porta, Lopez-de-Silanes, and Shleifer 2008) and the "mixed" legal origin (from Klerman, Mahoney, Spamann, and Weinstein 2011).

country	avg # of sample firms	avg % of negative-FCF firms	legal origin
ARGENTINA	62	38%	French
AUSTRALIA	1260	68%	Common
AUSTRIA	60	30%	German
BELGIUM	89	31%	French
BRAZIL	109	36%	French
CANADA	1625	73%	Common
CHILE	139	28%	French
CHINA	2138	40%	German
COLOMBIA	31	22%	French
DENMARK	109	33%	Scandinavian
FINLAND	119	28%	Scandinavian
FRANCE	533	31%	French
GERMANY	620	33%	German
GREECE	161	45%	French
HONG KONG	805	41%	Common
INDIA	1483	38%	Common
INDONESIA	293	37%	French
IRELAND	49	43%	Common
ISRAEL	260	40%	Common*
ITALY	196	33%	French
JAPAN	3361	26%	German
KOREA	1364	41%	German
LUXEMBOURG	22	31%	French
MALAYSIA	764	34%	Common
MEXICO	93	28%	French
NETHERLANDS	113	27%	French
NEW ZEALAND	99	36%	Common
NORWAY	140	48%	Scandinavian
PAKISTAN	154	31%	Common
PERU	82	23%	French
PHILIPPINES	135	39%	French*
POLAND	261	36%	German
PORTUGAL	44	26%	French
SINGAPORE	474	35%	Common
SOUTH AFRICA	235	29%	Common*
SPAIN	113	31%	French
SWEDEN	345	41%	Scandinavian
SWITZERLAND	176	23%	German
TAIWAN	1374	33%	German
THAILAND	422	29%	Common*
TURKEY	216	37%	French
UK	1152	44%	Common
USA	3669	45%	Common

Table 2. Summary statistics on FCF and firm value

This table reports summary statistics on FCF and firm value (Tobin's q), each of which is winsorized at the 1 and 99 percentiles in each country separately for positive- and negative-FCF firms. FCF is computed as: net income before extraordinary items and preferred dividends (IB) *plus* depreciation, depletion, and amortization (DP) *minus* capital expenditure (CAPX), *over* total assets (AT) (i.e., (IB + DP – CAPX) / AT). If the capital expenditure is missing, we treat it as zero. Each year in each country, we categorize the sample companies into two groups by the sign of their FCF for that year. $D_{\text{neg-FCF firms}}$ is the 0/1 dummy variable for negative-FCF firm-year observations. Tobin's q ratio is computed as: book value of total assets (AT) *plus* market value of common equity (MKTCAP) *minus* book value of common equity (CEQ), *over* book value of total assets (AT) (i.e., (AT + MKTCAP – CEQ) / AT). For the companies outside the U.S., MKTCAP is the data item "MV" in Datastream/Worldscope. For the U.S. firms, it is the product of the number of common shares outstanding (CSHO) and the year-end closing price (PRCC_F) from Compustat.

variable	n	mean	std	min	p1	p25	median	p75	p99	max
FCF (% of total assets)	474038	-6.0%	34.9%	-502.9%	-151.7%	-5.5%	1.6%	5.8%	27.1%	89.5%
$D_{\text{neg-FCF firms}}$	474038	0.41	0.49	0.00	0.00	0.00	0.00	1.00	1.00	1.00
Firm value (Tobin's q)	474038	1.84	2.43	0.10	0.43	0.92	1.22	1.90	10.32	183.98

Table 3. Summary statistics on FCF beta

This table reports summary statistics on the FCF beta estimated by Eq. (1), whereby the log-transformed Tobin's q ratio is regressed on the log-transformed FCF, along with year fixed effect, for each country, separately for positive-FCF and negative-FCF firms.

	n	mean	std	min	p25	median	p75	max
FCF beta among positive-FCF firms								
	43	0.172	0.044	0.091	0.136	0.171	0.199	0.282
FCF beta among negative-FCF firms								
	43	-0.100	0.071	-0.294	-0.150	-0.080	-0.042	-0.006

Table 4. Country-specific firm value

Panel A of this table reports summary statistics on the country-specific firm value estimated by Eq. (2), in which the log-transformed Tobin's q ratio is regressed on a set of country fixed effects, along with year fixed effect, as a panel regression, separately for positive-FCF and negative-FCF firms. Panel B reports the regression of the country-specific firm value on legal origin (as a proxy for country-level institutions), along with the GDP per capita in log as a control. The GDP data are the average over the same period of 2000-2018. All GDP data except for Taiwan are obtained from The World Bank (https://data.worldbank.org/indicator/NY.GDP.PCAP.KD). The data for Taiwan are from the country's National Statistics web-site (https://eng.stat.gov.tw). The p-values for regressions are based on the White (1980) covariance.

Panel A. Summary statistics

	n	mean	std	min	p25	median	p75	max
Country-specific valuation of positive-FCF firms								
	43	0.000	0.159	-0.390	-0.073	-0.014	0.104	0.469
(After dividing by global average of 0.276)			0.575	-1.410	-0.265	-0.050	0.375	1.697
Country-specific valuation of negative-FCF firms								
	43	0.000	0.194	-0.462	-0.128	-0.010	0.088	0.412
(After dividing by global average of 0.223)			0.871	-2.067	-0.574	-0.043	0.392	1.845

Panel B. Regression on legal origin

Dependent variable: Country-specific firm value

	using all sample 43 countries							
	positive-FCF firms				negative-FCF firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.030	(0.520)	0.039	(0.408)	0.097	(0.139)	0.115	(0.042)
ln(GDP_pc)			0.040	(0.074)			0.078	(0.003)
R-squared	0.8%		9.0%		5.6%		26.7%	
# observations	43		43		43		43	

	using only common law or French civil law countries							
	positive-FCF firms				negative-FCF firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.087	(0.076)	0.083	(0.067)	0.171	(0.014)	0.163	(0.003)
ln(GDP_pc)			0.043	(0.013)			0.087	(0.000)
R-squared	9.8%		23.3%		19.1%		46.4%	
# observations	31		31		31		31	

Table 5. Country-specific FCF beta

This table reports the regression of the country-specific FCF beta on legal origin (as a proxy for country-level institutions), along with the GDP per capita in log as a control. The FCF beta is estimated by Eq. (3) and we use the sum of the estimated β and β^C. The GDP data and variable are the same as Table 4. The p-values for regressions are based on the White (1980) covariance.

Dependent variable: Country-specific FCF beta								
	using all sample 43 countries							
	positive-FCF firms				negative-FCF firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.010	(0.430)	0.011	(0.402)	-0.064	(0.007)	-0.071	(0.000)
ln(GDP_pc)			0.003	(0.533)			-0.028	(0.004)
R-squared	1.1%		1.8%		19.9%		42.5%	
# observations	43		43		43		43	
	using only common law or French civil law countries							
	positive-FCF firms				negative-FCF firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.018	(0.173)	0.018	(0.159)	-0.083	(0.002)	-0.081	(0.000)
ln(GDP_pc)			-0.003	(0.459)			-0.025	(0.033)
R-squared	5.6%		6.6%		30.2%		45.4%	
# observations	31		31		31		31	

Table 6. Country-specific firm value and FCF beta

This table reports the regression of the country-specific firm value on country-specific FCF beta, along with the GDP per capita in log as a control. The country-specific firm value and FCF beta are estimated by Eq.'s (2) and (3), respectively. The FCF beta is the sum of the estimated β and β^C in Eq. (3). The GDP data and variable are the same as Tables 4 and 5. The p-values for regressions are based on the White (1980) covariance.

Dependent variable: Country-specific firm value								
	using all sample 43 countries							
	positive-FCF firms				negative-FCF firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
FCF beta	1.150	(0.068)	1.082	(0.060)	-1.928	(<.0001)	-1.713	(<.0001)
ln(GDP_pc)			0.035	(0.107)			0.030	(0.101)
R-squared	10.7%		17.1%		46.0%		48.5%	
# observations	43		43		43		43	
	using only common law or French civil law countries							
	positive-FCF firms				negative-FCF firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
FCF beta	1.179	(0.226)	1.312	(0.121)	-2.106	(<.0001)	-1.840	(<.0001)
ln(GDP_pc)			0.048	(0.010)			0.041	(0.010)
R-squared	10.7%		27.5%		65.6%		70.7%	
# observations	31		31		31		31	

Table 7. Country effects vs. industry effects

Panel A of this table reports the regression of a stack of country effects and industry effects in FCF, both estimated by Eq. (4), on a dummy variable for country effects (D_{CE}), along with year fixed effects. Panel B reports the regression of a stack of country effects and industry effects in firm value, both estimated by Eq. (6), on a dummy variable for country effects (D_{CE}), along with year fixed effects. That is, both Panels A and B report the results of Eq. (5) but with different dependent variables. In both panels, the error terms are allowed to cluster within the same country or the same industry.

Panel A. Regression of country and industry effects in FCF

dependent variable: country effects or industry effects in FCF

	positive-FCF firms		negative-FCF firms	
	Est.	(p-val)	Est.	(p-val)
D_{CE}	0.015	(0.440)	0.082	(0.067)
year FE	yes		yes	
R-squared	0.9%		2.9%	
# observations	1596		1596	

Panel B. Regression of country and industry effects in firm value

dependent variable: country effects or industry effects in firm value

	positive-FCF firms		negative-FCF firms	
regressor	Est.	(p-val)	Est.	(p-val)
D_{CE}	-0.001	(0.982)	0.131	(0.001)
year FE	yes		yes	
R-squared	2.4%		4.9%	
# observations	1596		1596	

Table 8. Analysis of small and large firms

Panel A of this table reports the regression of country-specific firm value, estimated separately for small and large firms, on legal origin. It uses the same specification as Panel B of Table 4, except that the regressions are estimated separately for small and large firms. The two size-sorted subsamples are constructed each year in each country by the median total assets. Panel B reports the regression of the country-specific FCF beta, estimated separately for small and large firms, on legal origin. It uses the same specification as Table 5, except that the regressions are estimated separately for the same small and large firms, as in Panel A. Panel C reports the regression of the country-specific firm value on country-specific FCF beta, both estimated separately for small and large firms. The p-values for regressions are based on the White (1980) covariance.

Panel A. Country-specific firm value

Dependent variable: Country-specific firm value

	using all sample 43 countries							
	small firms				large firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.102	(0.169)	0.122	(0.069)	0.021	(0.623)	0.027	(0.540)
ln(GDP_pc)			0.088	(0.010)			0.024	(0.130)
R-squared	4.1%		21.7%		0.6%		5.2%	
# observations	43		43		43		43	

	using only common law or French civil law countries							
	small firms				large firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.203	(0.012)	0.194	(0.003)	0.048	(0.268)	0.046	(0.276)
ln(GDP_pc)			0.100	(0.000)			0.022	(0.125)
R-squared	18.9%		44.6%		4.3%		9.6%	
# observations	31		31		31		31	

Table 8. cont.

Panel B. Country-specific FCF beta

Dependent variable: Country-specific FCF beta

	using all sample 43 countries							
	small firms				large firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	-0.013	(0.217)	-0.014	(0.212)	-0.005	(0.024)	-0.005	(0.020)
ln(GDP_pc)			-0.003	(0.283)			0.000	(0.793)
R-squared	6.3%		8.3%		11.3%		11.5%	
# observations	43		43		43		43	

	using only common law or French civil law countries							
	small firms				large firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	-0.012	(0.263)	-0.012	(0.258)	-0.006	(0.011)	-0.006	(0.009)
ln(GDP_pc)			-0.005	(0.195)			0.001	(0.369)
R-squared	4.7%		8.5%		19.7%		22.0%	
# observations	31		31		31		31	

Panel C. Country-specific firm value and FCF beta

Dependent variable: Country-specific firm value

	using all sample 43 countries							
	small firms				large firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
FCF beta	-3.188	(0.000)	-2.771	(0.000)	-8.218	(0.001)	-8.180	(0.000)
ln(GDP_pc)			0.076	(0.014)			0.022	(0.108)
R-squared	10.6%		23.8%		20.0%		24.0%	
# observations	43		43		43		43	

	using only common law or French civil law countries							
	small firms				large firms			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
FCF beta	-3.180	(0.002)	-2.387	(0.004)	-6.783	(0.001)	-7.444	(0.001)
ln(GDP_pc)			0.092	(0.003)			0.029	(0.021)
R-squared	14.2%		35.1%		16.8%		25.6%	
# observations	31		31		31		31	

Table 9. Analysis of size-adjusted FCF-sorted subsamples

This table reports the results for the size-adjusted FCF-sorted subsamples. Specifically, we exclude the smallest quintile ("q1") firms from positive-FCF firms, and the largest quintile ("q5") firms from negative-FCF firms. The size quintiles are determined each year in each country by total assets using all (i.e., both positive-FCF and negative-FCF) firms. All other specifications are the same as Table 8.

Panel A. Country-specific firm value for size-adjusted FCF-sorted subsamples

Dependent variable: Country-specific firm value

	using all sample 43 countries							
	positive-FCF firms (excl. size q1)				negative-FCF firms (excl. size q5)			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.029	(0.537)	0.037	(0.443)	0.103	(0.150)	0.123	(0.046)
ln(GDP_pc)			0.033	(0.097)			0.087	(0.003)
R-squared	0.9%		7.2%		5.2%		26.6%	
# observations	43		43		43		43	

	using only common law or French civil law countries							
	positive-FCF firms (excl. size q1)				negative-FCF firms (excl. size q5)			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.072	(0.138)	0.068	(0.137)	0.192	(0.012)	0.183	(0.003)
ln(GDP_pc)			0.034	(0.045)			0.097	(0.000)
R-squared	7.2%		16.5%		19.6%		47.4%	
# observations	31		31		31		31	

Table 9. cont.

Panel B. Country-specific FCF beta for size-adjusted FCF-sorted subsamples

Dependent variable: Country-specific FCF beta

	using all sample 43 countries							
	positive-FCF firms (excl. size q1)				negative-FCF firms (excl. size q5)			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.011	(0.454)	0.011	(0.438)	-0.072	(0.006)	-0.079	(0.000)
ln(GDP_pc)			0.001	(0.821)			-0.030	(0.007)
R-squared	1.0%		1.1%		20.9%		42.1%	
# observations	43		43		43		43	

	using only common law or French civil law countries							
	positive-FCF firms (excl. size q1)				negative-FCF firms (excl. size q5)			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
Common law	0.017	(0.238)	0.018	(0.214)	-0.090	(0.002)	-0.088	(0.000)
ln(GDP_pc)			-0.006	(0.247)			-0.027	(0.041)
R-squared	4.4%		6.9%		30.1%		44.6%	
# observations	31		31		31		31	

Panel C. Country-specific firm value and FCF beta for size-adjusted FCF-sorted subsamples

Dependent variable: Country-specific firm value

	using all sample 43 countries							
	positive-FCF firms (excl. size q1)				negative-FCF firms (excl. size q5)			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
FCF beta	1.370	(0.001)	1.354	(0.000)	-1.860	(<.0001)	-1.611	(<.0001)
ln(GDP_pc)			0.030	(0.105)			0.039	(0.043)
R-squared	22.0%		27.4%		41.5%		45.1%	
# observations	43		43		43		43	

	using only common law or French civil law countries							
	positive-FCF firms (excl. size q1)				negative-FCF firms (excl. size q5)			
	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)	Est.	(p-val)
FCF beta	1.434	(0.024)	1.622	(0.004)	-2.117	(<.0001)	-1.840	(<.0001)
ln(GDP_pc)			0.044	(0.005)			0.048	(0.005)
R-squared	20.0%		34.9%		64.9%		70.7%	
# observations	31		31		31		31	

Table 10. Dynamics of FCF

Panel A of this table reports the unconditional and conditional probabilities of negative FCF, averaged over countries in the same legal origin and across years. The unconditional probability of a country in a year is the fraction of negative-FCF firms in the country's sample for that year. For conditional probability, we keep track of each sample firm over time and code whether the firm has negative FCF two, three, or four years in a row. We then compute the fractions of those incidences in a country and, using those fractions, Prob(neg FCF_0 | neg FCF_{-1}), Prob(neg FCF_0 | neg FCF_{-1} & neg FCF_{-2}), and Prob(neg FCF_0 | neg FCF_{-1} & neg FCF_{-2} & neg FCF_{-3}). For the statistical significance in difference between legal origins, we regress each probability (pooled across countries and years) on a dummy variable for common law countries, the GDP per capita in log (averaged over 2000-2018), and a set of year fixed effects; we then report the p-value of the common-law dummy variable for which the error terms are allowed to cluster within the same country. Panel B of the table reports the transition matrix between positive and negative FCF in two consecutive years. Similar to Panel A, we keep track of each sample firm over time and code the type of FCF (i.e., positive or negative) the firm has in two consecutive years into: (neg FCF_0 & neg FCF_{-1}), (pos FCF_0 & neg FCF_{-1}), (neg FCF_0 & pos FCF_{-1}), or (pos FCF_0 & pos FCF_{-1}). We then compute Prob(neg FCF_0 | neg FCF_{-1}), Prob(pos FCF_0 | neg FCF_{-1}), Prob(neg FCF_0 | pos FCF_{-1}), and Prob(pos FCF_0 | pos FCF_{-1}), and report their averages over countries in the same legal origin and across years. The statistical difference is obtained by the same method as Panel A.

Panel A. Unconditional and conditional probability of negative FCF

	common law	civil law	French civil law
Prob (neg FCF_0)	0.418	0.329	0.320
Prob (neg FCF_0 | neg FCF_{-1})	0.696	0.610	0.610
Prob (neg FCF_0 | neg FCF_{-1} & neg FCF_{-2})	0.745	0.665	0.666
Prob (neg FCF_0 | neg FCF_{-1} & neg FCF_{-2} & neg FCF_{-3})	0.769	0.698	0.697

	p-value for difference between	
	common vs civil law	common vs French civil law
Prob (neg FCF_0)	(0.012)	(0.011)
Prob (neg FCF_0 | neg FCF_{-1})	(0.001)	(0.003)
Prob (neg FCF_0 | neg FCF_{-1} & neg FCF_{-2})	(0.001)	(0.006)
Prob (neg FCF_0 | neg FCF_{-1} & neg FCF_{-2} & neg FCF_{-3})	(0.003)	(0.023)

Table 10. cont.

Panel B. Transition matrix between positive and negative FCF

		common law		civil law		French civil law	
		year t		year t		year t	
		negative FCF	positive FCF	negative FCF	positive FCF	negative FCF	positive FCF
year t-1	positive FCF	0.202	0.798	0.182	0.818	0.174	0.826
	negative FCF	0.696	0.304	0.610	0.390	0.610	0.390

p-value for difference between	
common vs civil law	common vs French civil law
(0.148)	(0.043)
(0.001)	(0.003)

Figure 1. Fraction of negative-FCF firms in sample countries (average over 2000-2018)
This figure reports the fraction of negative-FCF firms in our sample countries. The fractions are averaged over the sample period of 2000-2018 for each country. These averages are also reported in Table 1.

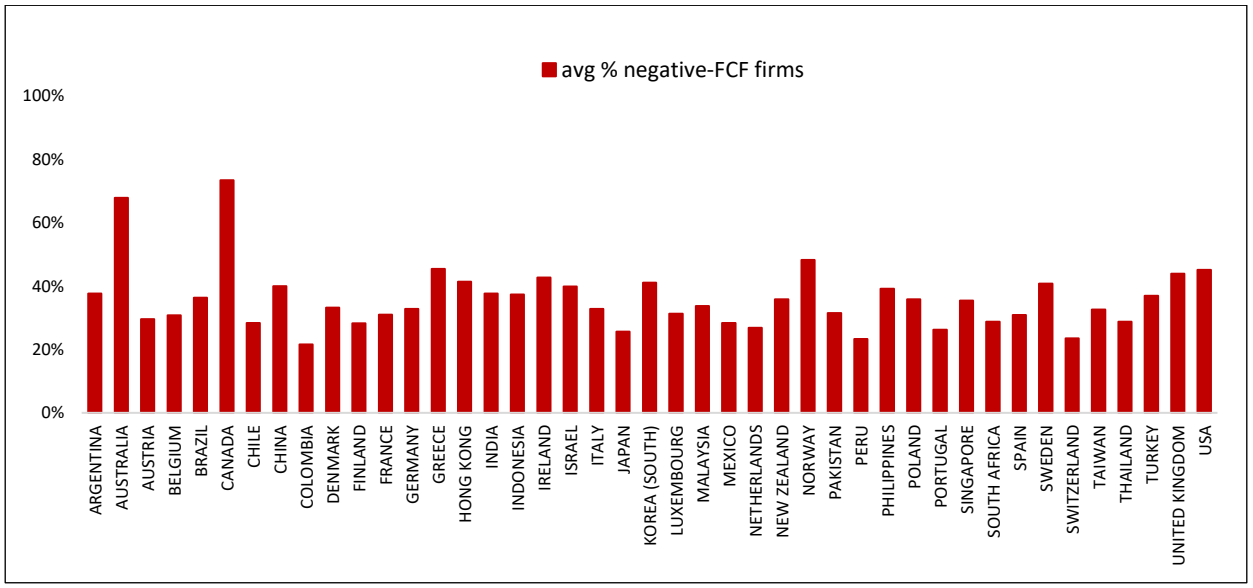
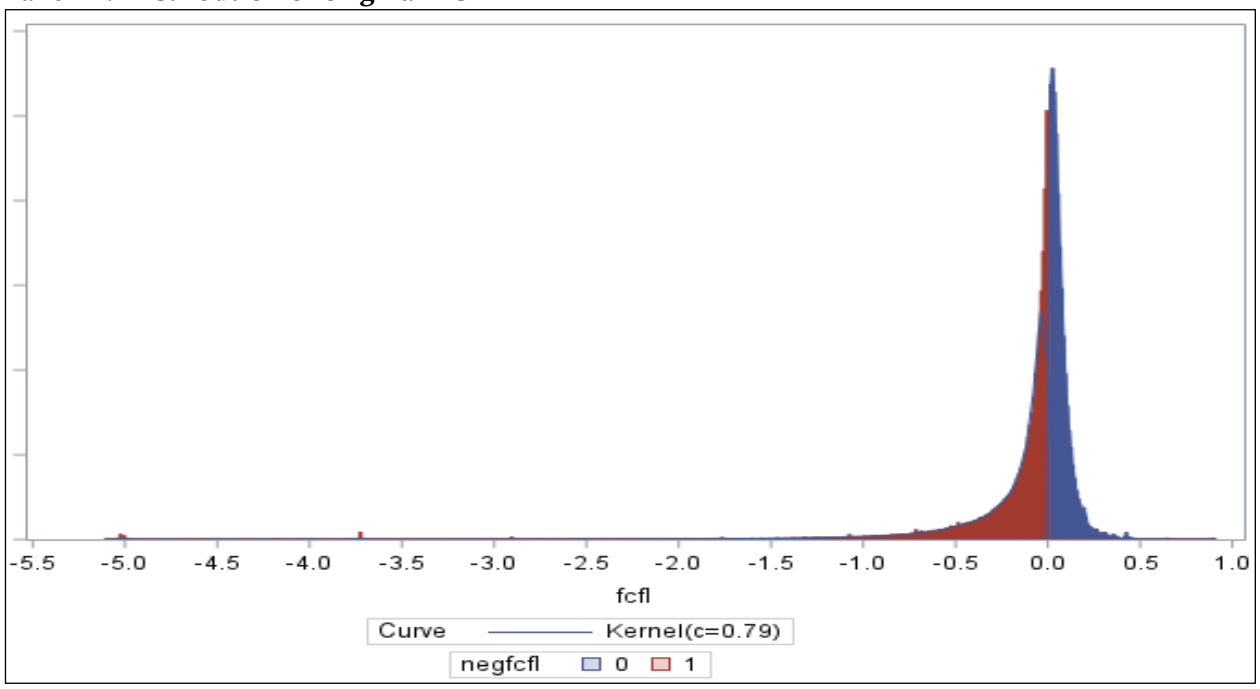


Figure 2. Distributions of original FCF and log-transformed FCF

This figure reports the log transformation of FCF, from Panel A to Panel B. With positive FCF, it is *ln*(FCF). With non-positive (i.e., including zero) FCF, it is $-ln(-FCF^{*})$, in which FCF^{*} is the original FCF moved left by the minimum FCF in absolute terms among negative FCF in the country. For example, if a country's closest-to-zero FCF among negative FCF is –0.0001, all non-positive (i.e., including zero) FCF values are moved to the left by 0.0001. Positive-FCF firms are in blue, and negative-FCF firms are in red.

Panel A. Distribution of original FCF



Panel B. Distribution of log-transformed FCF

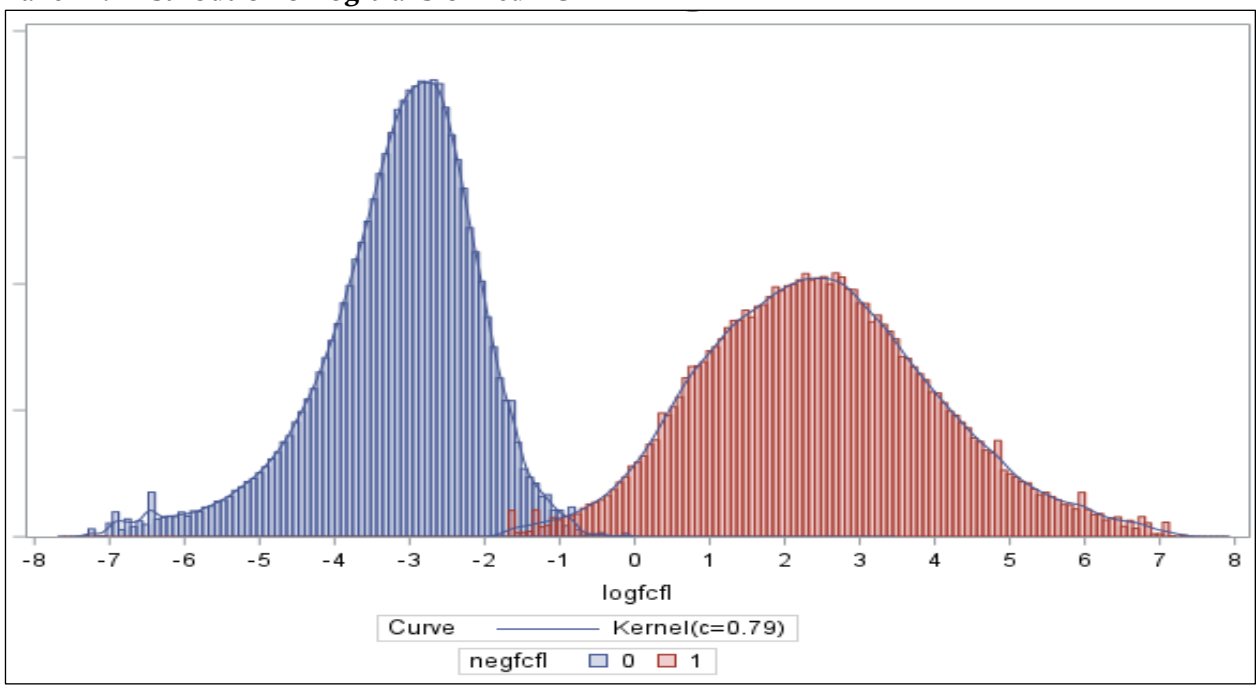
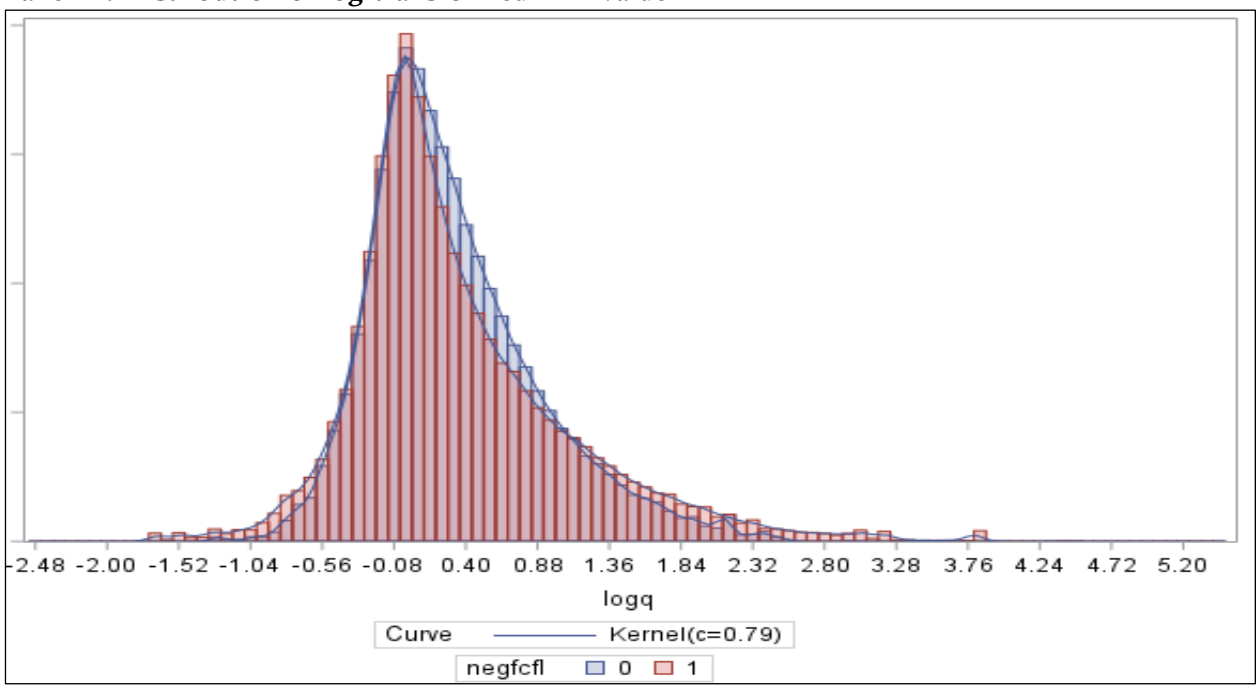


Figure 3. Distributions of firm value and firm size

This figure reports the distribution of log-transformed firm value (Tobin's q; Panel A), the distribution of log-transformed firm size (Panel B), and the distribution of size quintiles (Panel C), separately for positive-FCF and negative-FCF firms. Tobin's q is defined in Table 2 and firm size is a firm's total assets in log. For Panel C, we sort all (i.e., both positive- and negative-FCF) sample firms into quintiles by their total assets, each year in each country, and then report the fraction of each quintile in each of the pooled FCF-sorted subsamples. Positive-FCF firms are in blue, and negative-FCF firms are in red.

Panel A. Distribution of log-transformed firm value



Panel B. Distribution of log-transformed firm size

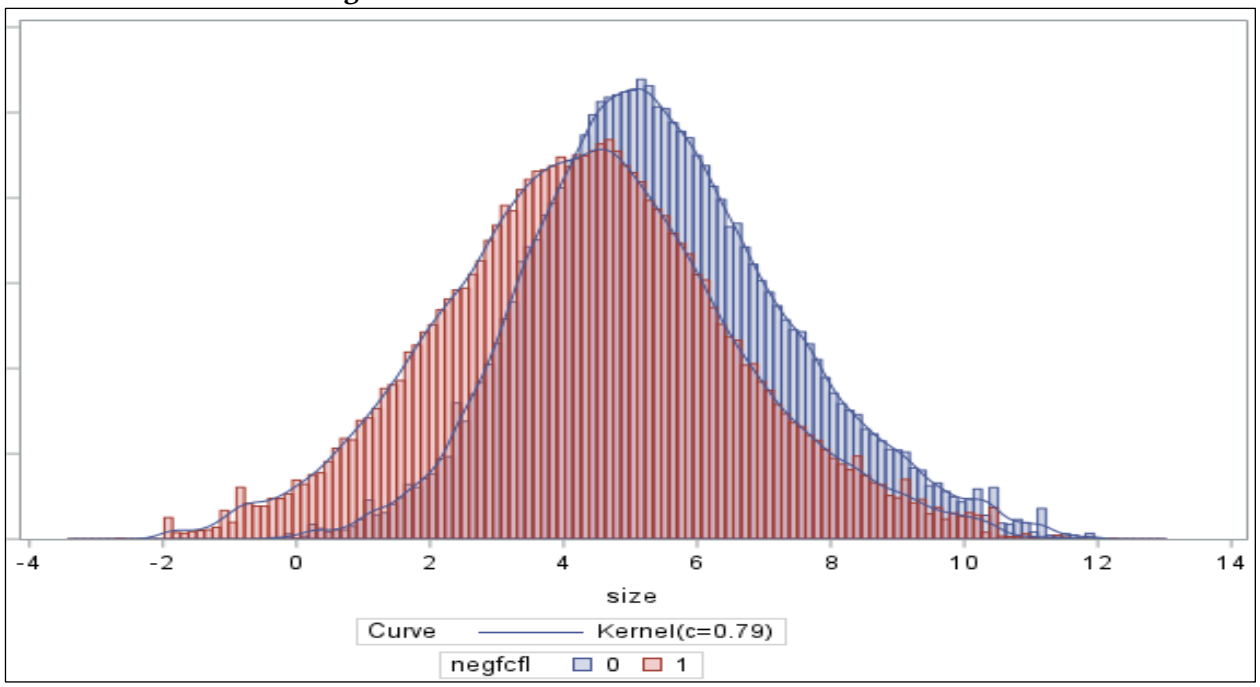
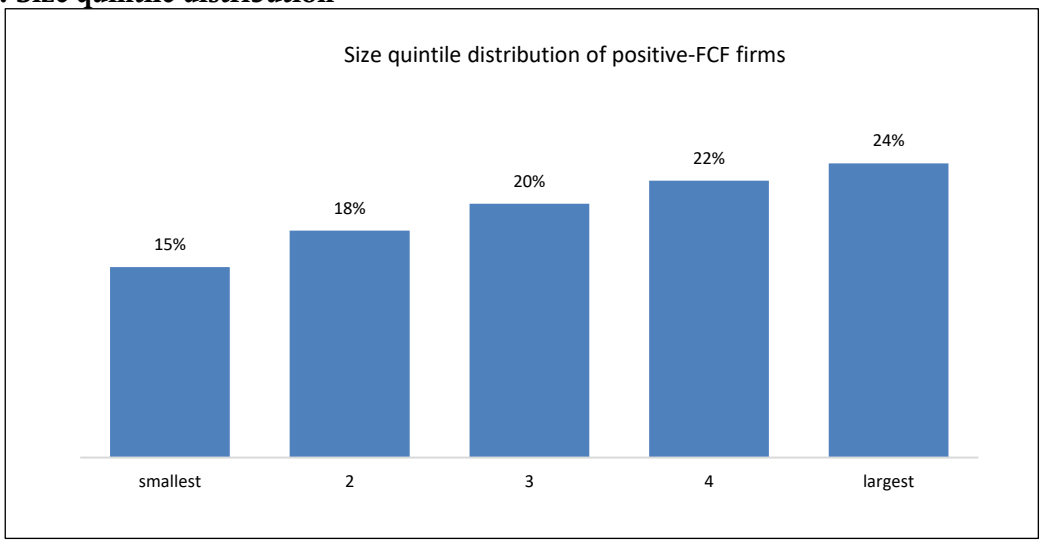


Figure 3. cont.

Panel C. Size quintile distribution



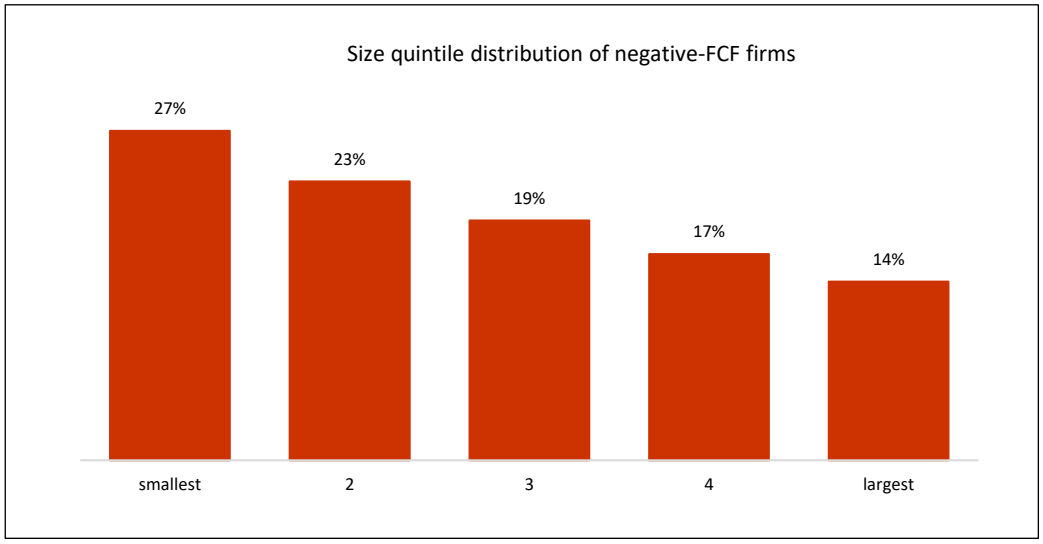


Figure 4. Distribution of FCF beta across sample countries
This figure reports the FCF beta estimated by Eq. (1) and whose summary statistics are reported in Table 3.

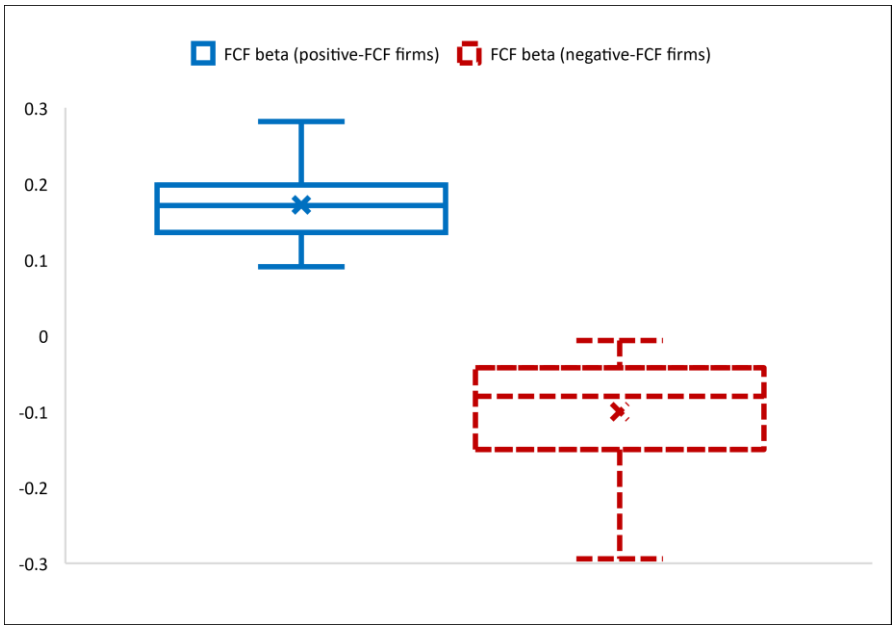
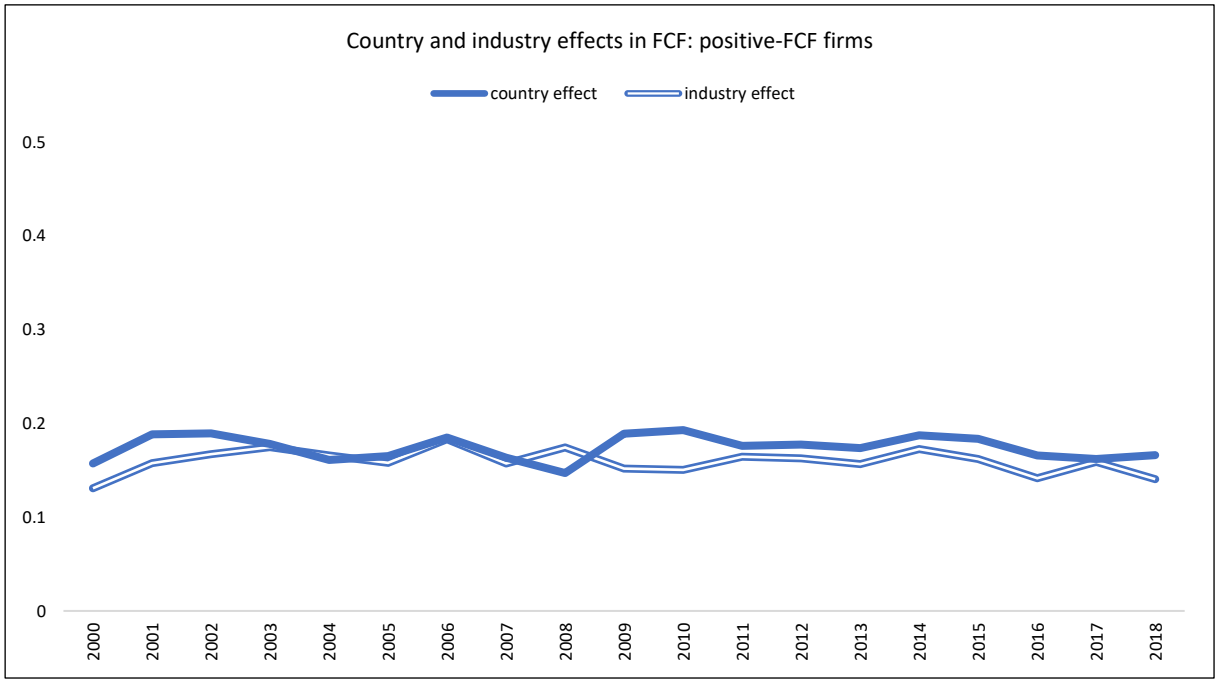


Figure 5. Country effects vs. industry effects in FCF

This figure reports the country and industry effects in FCF, which are estimated by Eq. (4). Specifically, a given year's average country effect is: $CE_t^{avg} = \sum CE_t^C / nc_t$, where $CE_t^C = |\alpha_t^C|$ and nc_t is the number of countries in year t. Similarly, a given year's average industry effect is: $IE_t^{avg} = \sum IE_t^I / ni_t$, where $IE_t^I = |\alpha_t^I|$ and ni_t is the number of industries in year t.



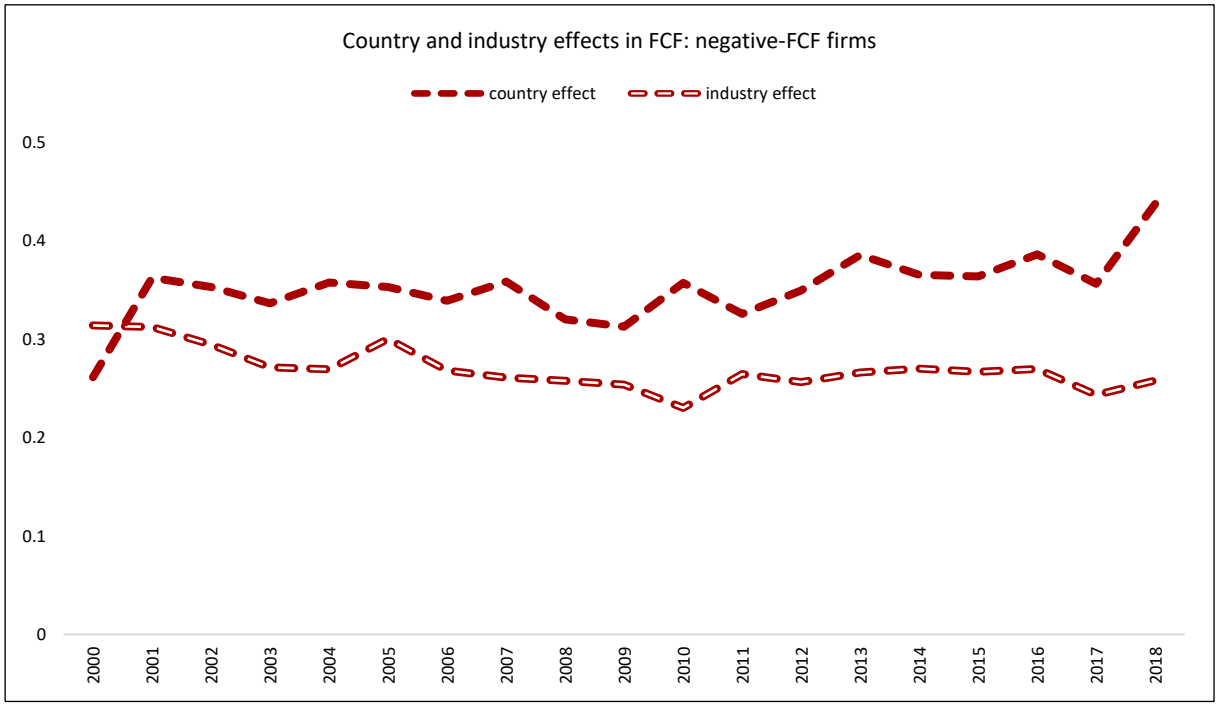


Figure 6. Firm-specific components in FCF
This figure reports the magnitude of firm-specific components in FCF, which is computed as: one minus the R-squared of Eq. (4).

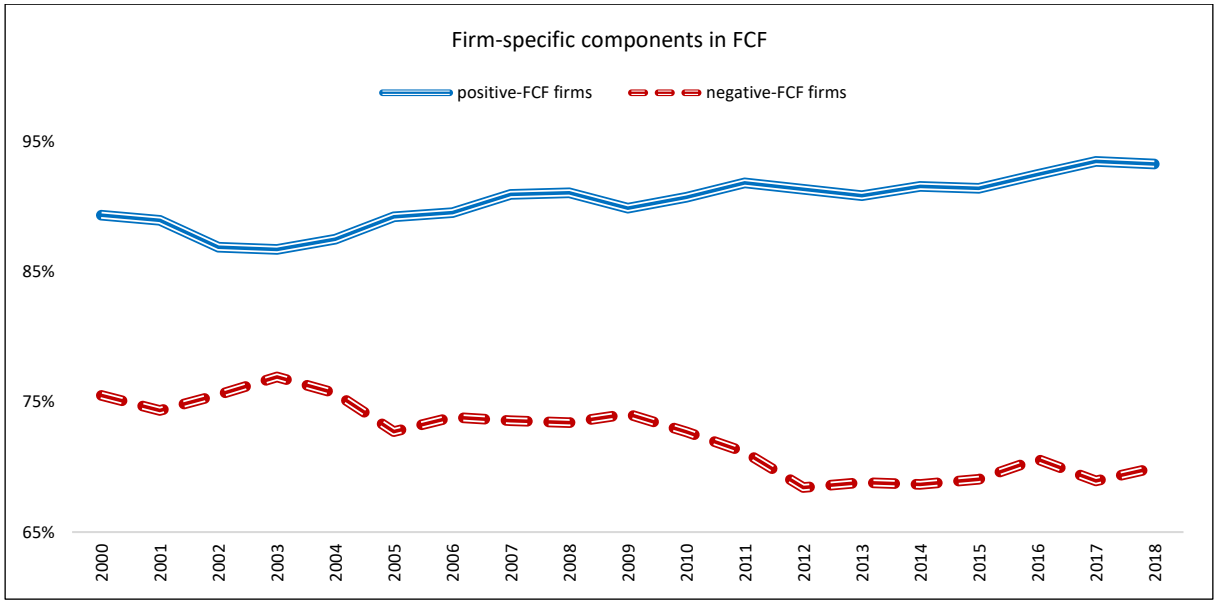
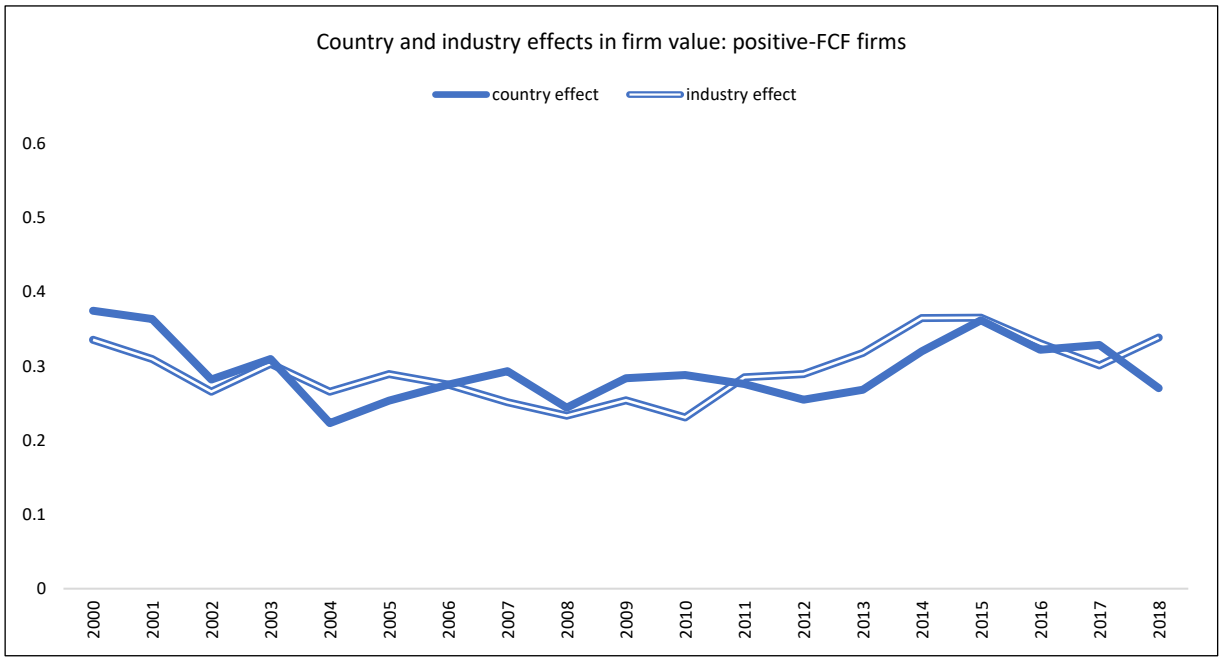


Figure 7. Country effects vs. industry effects in firm value

This figure reports the country and industry effects in FCF, which are estimated by Eq. (6). Specifically, a given year's average country effect is: $CE_t^{avg} = \sum CE_t^C / nc_t$, where $CE_t^C = |\alpha_t^C| + |\beta_t^C|$ and nc_t is the number of countries in year t. Similarly, a given year's average industry effect is: $IE_t^{avg} = \sum IE_t^I / ni_t$, where $IE_t^I = |\alpha_t^I| + |\beta_t^I|$ and ni_t is the number of industries in year t.



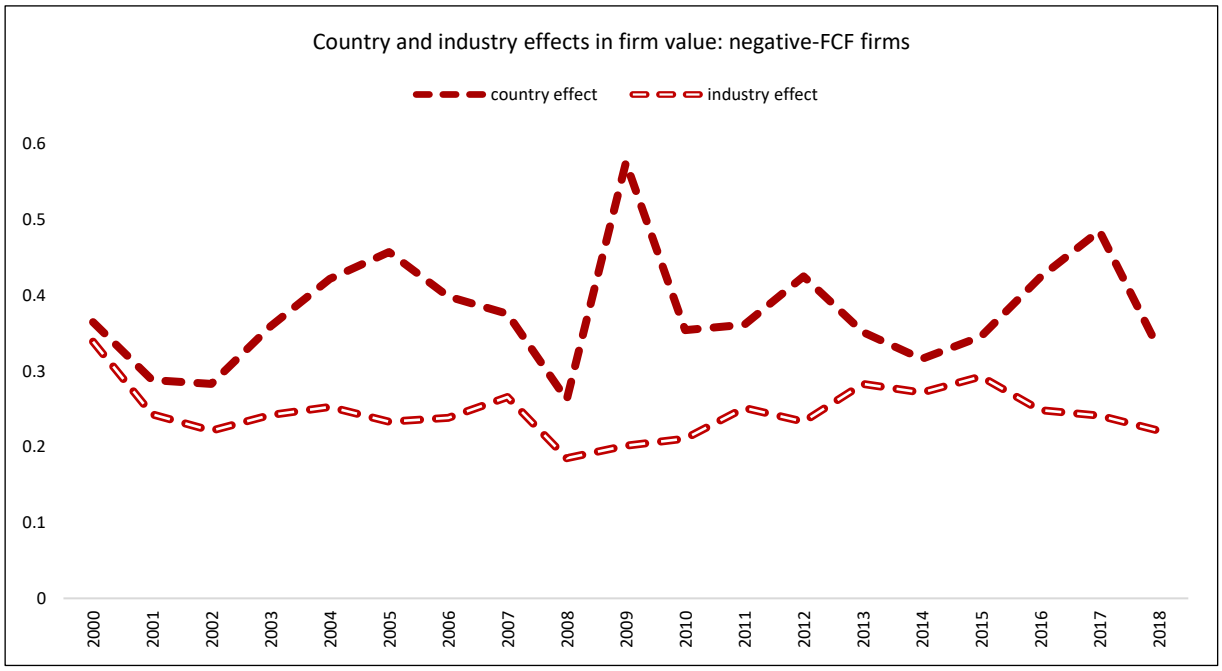
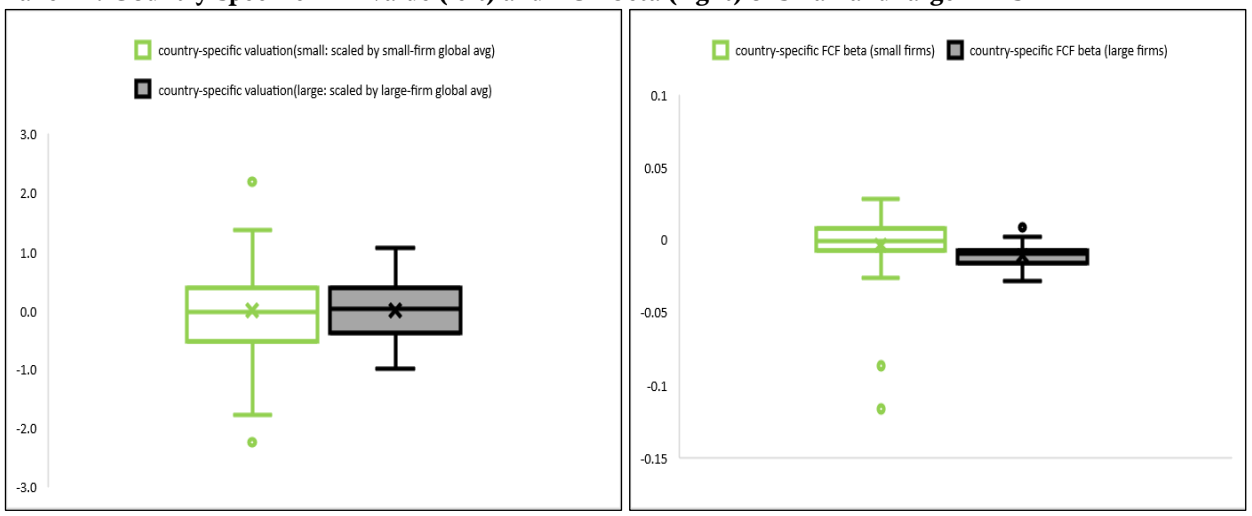


Figure 8. Small vs. large firms

Pane A of this figure reports the country-specific firm value (left figure) and the country-specific FCF beta (right figure), which is estimated by Eq.'s (2) and (3), respectively, and separately for small and large firms. The two size-sorted subsamples are constructed each year in each country by the median total assets. Panel B of this figure reports the composition of the size-sorted subsamples between positive-FCF and negative-FCF firms.

Panel A. Country-specific firm value (left) and FCF beta (right) of small and large firms



Panel B. Composition of small-firm subsample(left) and large-firm subsample (right)

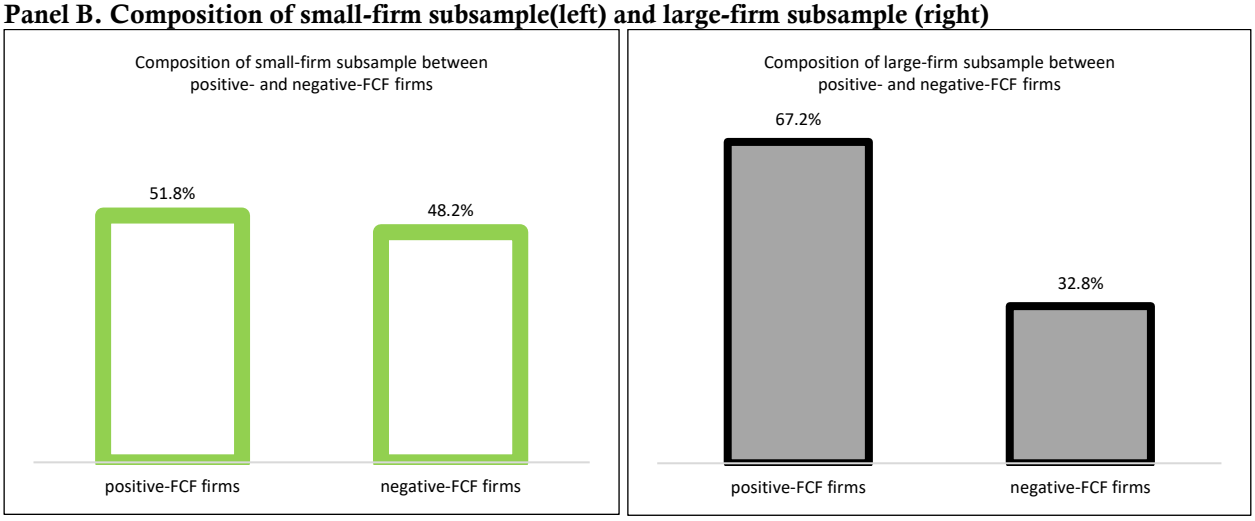
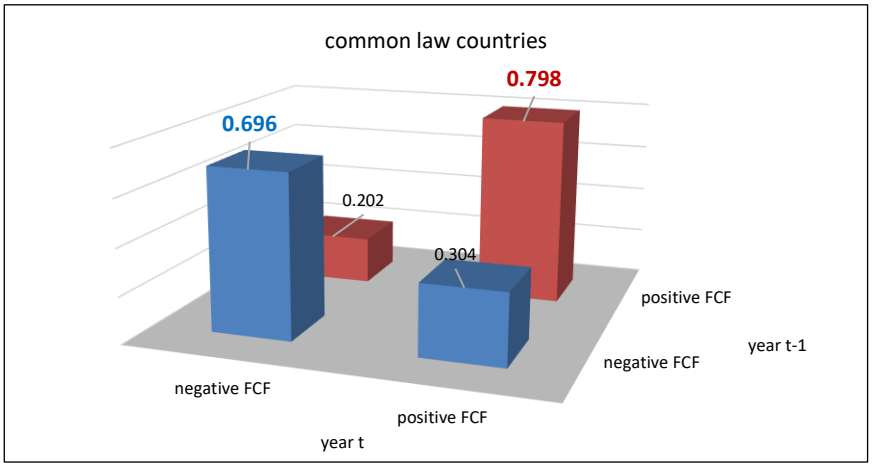


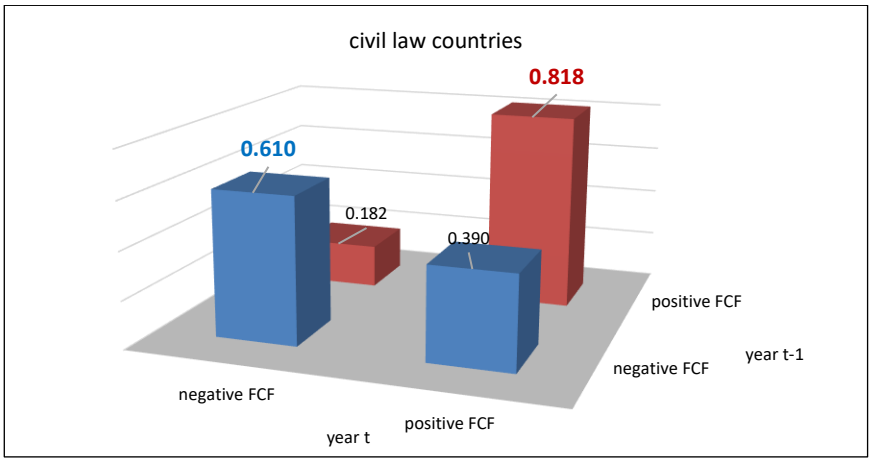
Figure 9. Transition matrix

This figure reports the transition matrix between positive and negative FCF in two consecutive years. We keep track of each firm over time and code the type of its FCF (i.e., positive or negative) in two consecutive years into: (neg FCF_0 & neg FCF_{-1}), (pos FCF_0 & neg FCF_{-1}), (neg FCF_0 & pos FCF_{-1}), or (pos FCF_0 & pos FCF_{-1}). We then compute Prob(neg FCF_0 | neg FCF_{-1}), Prob(pos FCF_0 | neg FCF_{-1}), Prob(neg FCF_0 | pos FCF_{-1}), and Prob(pos FCF_0 | pos FCF_{-1}), and report their averages over countries in the same legal origin and across years. These probabilities are also reported in Panel B of Table 10.

Panel A. Common law countries



Panel B. Civil law countries



Panel C. French civil law countries

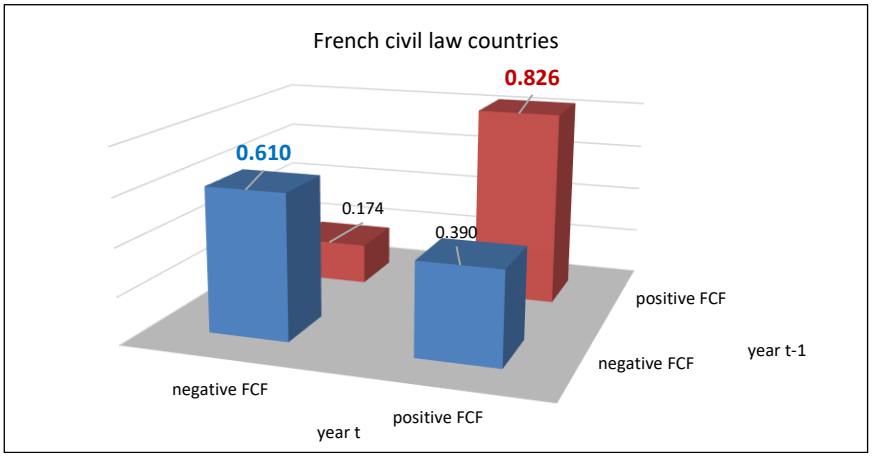


Figure 10. Doing Business Indicators in relation to FCF beta

This figure reports the coefficients and t-statistics of the univariate cross-country regression of the FCF beta on each of the World Bank's 11 Doing Business Indicators (DBIs):

https://databank.worldbank.org/source/doing-business.

Each Indicator is first averaged within a country over our study period (2000-2018, within which each DBI is available) and then standardized by the cross-country average and standard deviation. As a result, all DBIs have a mean value of zero with a standard deviation of one. The regressions are estimated separately for positive-FCF and negative-FCF firms. The t-statistics are based on the White (1980) covariance.

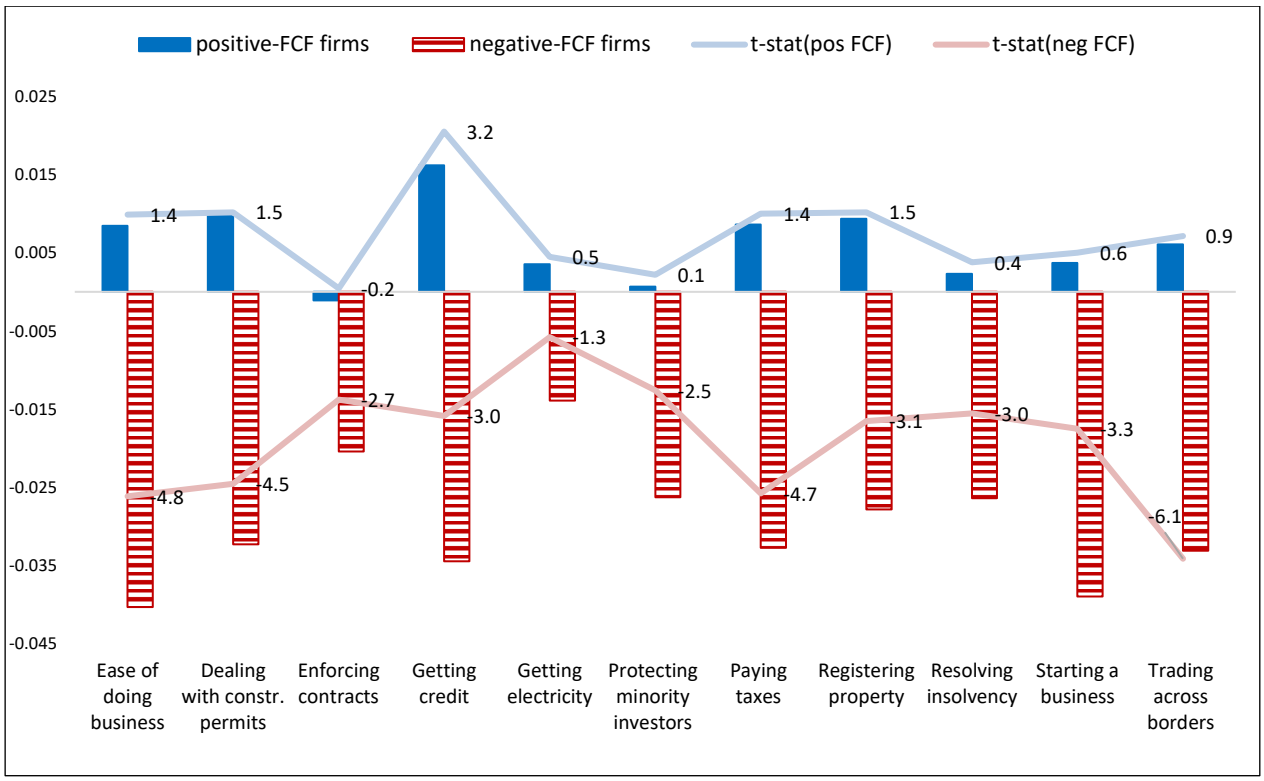
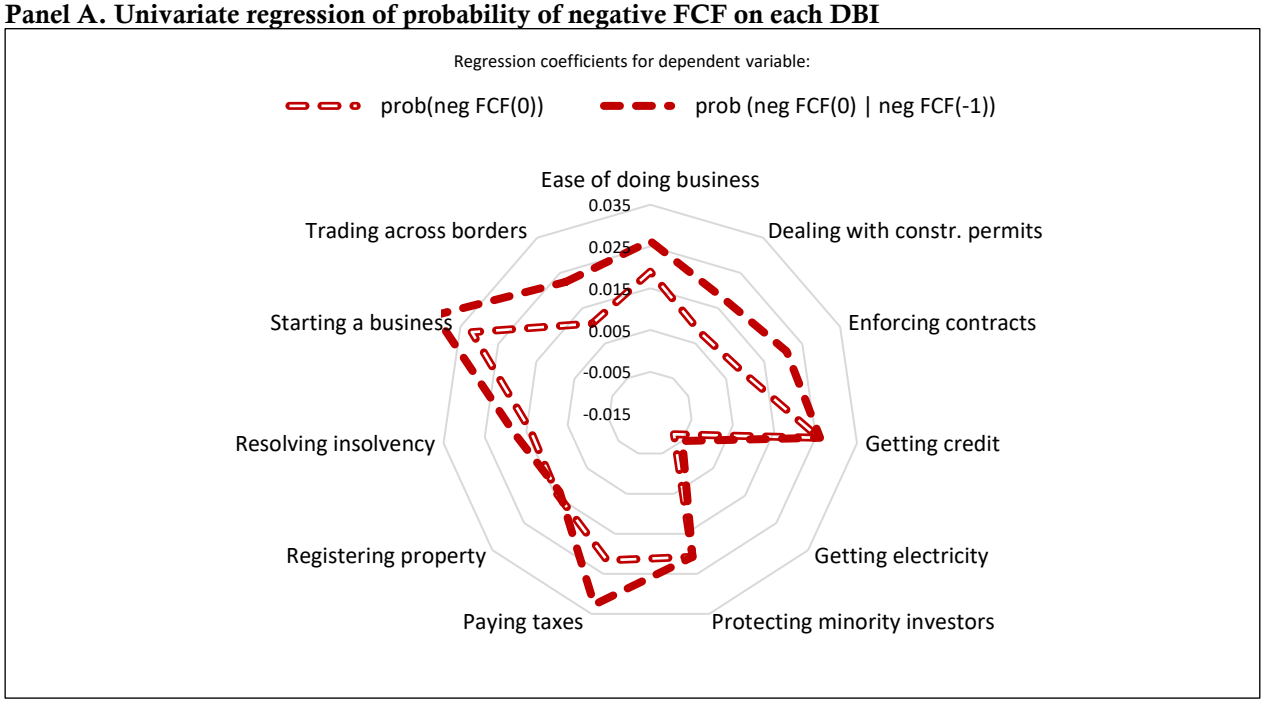


Figure 11. Doing Business Indicators in relation to dynamics of FCF

Panel A of this figure reports the coefficients (top) and t-statistics (bottom) of the univariate cross-country regression of Prob(neg FCF_0), or Prob(neg FCF_0 | neg FCF_{-1}), on the World Bank's 11 Doing Business Indicators (DBIs). Panel B reports the coefficients (top) and t-statistics (bottom) of the univariate cross-country regression of Prob(neg FCF_0 | neg FCF_{-1}), or Prob(pos FCF_0 | pos FCF_{-1}), on the DBIs. Thus, the results for Prob(neg FCF_0 | neg FCF_{-1}) are the same between the two panels. Details of those indicators are in Figures 9. The t-statistics are based on the White (1980) covariance.

Panel A. Univariate regression of probability of negative FCF on each DBI



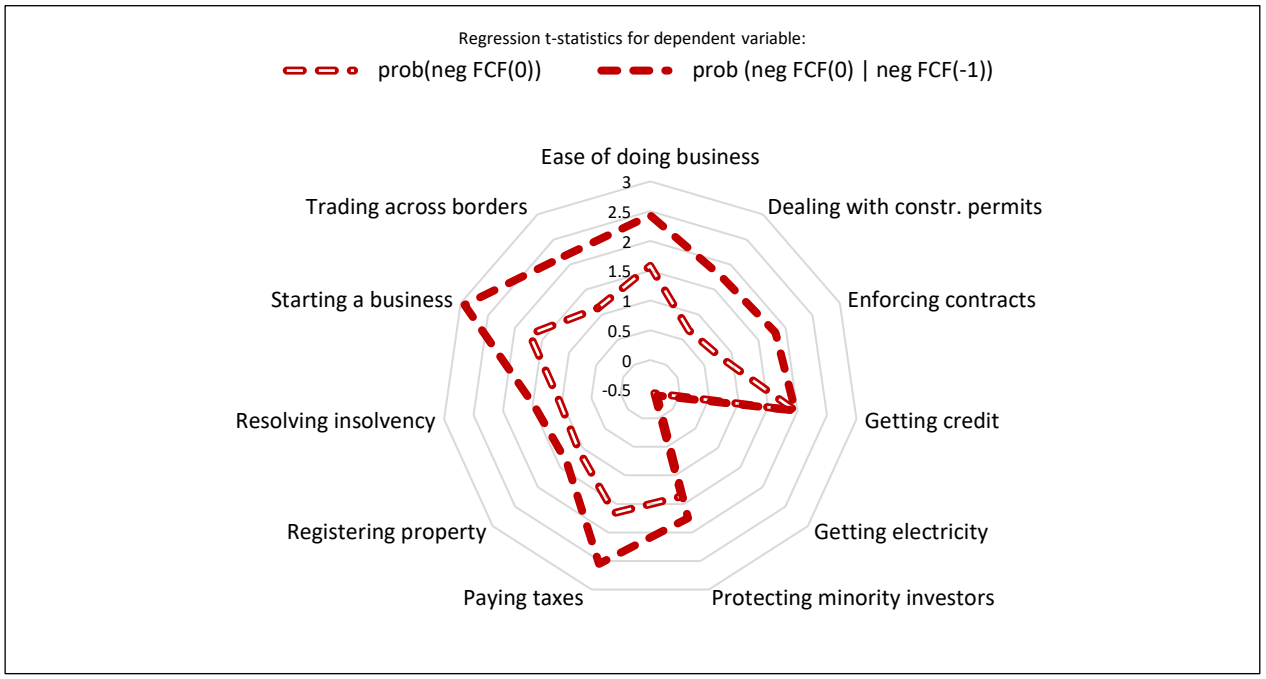
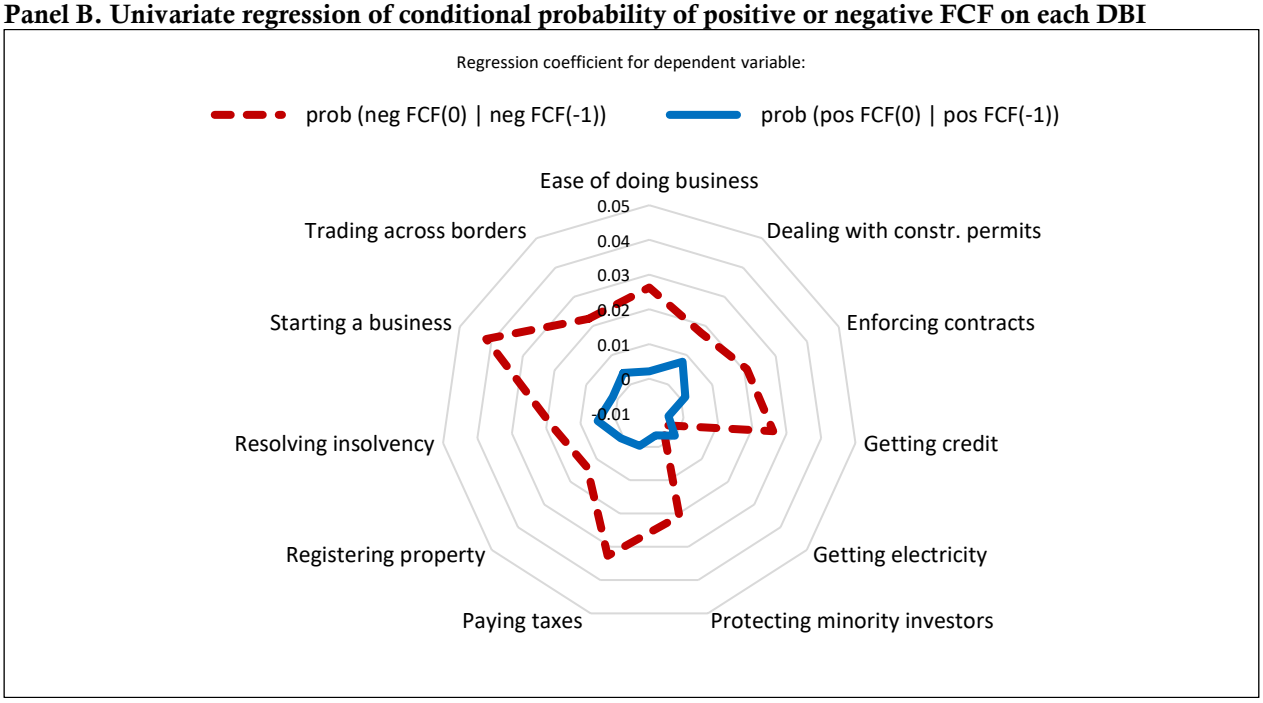


Figure 11. cont.

Panel B. Univariate regression of conditional probability of positive or negative FCF on each DBI



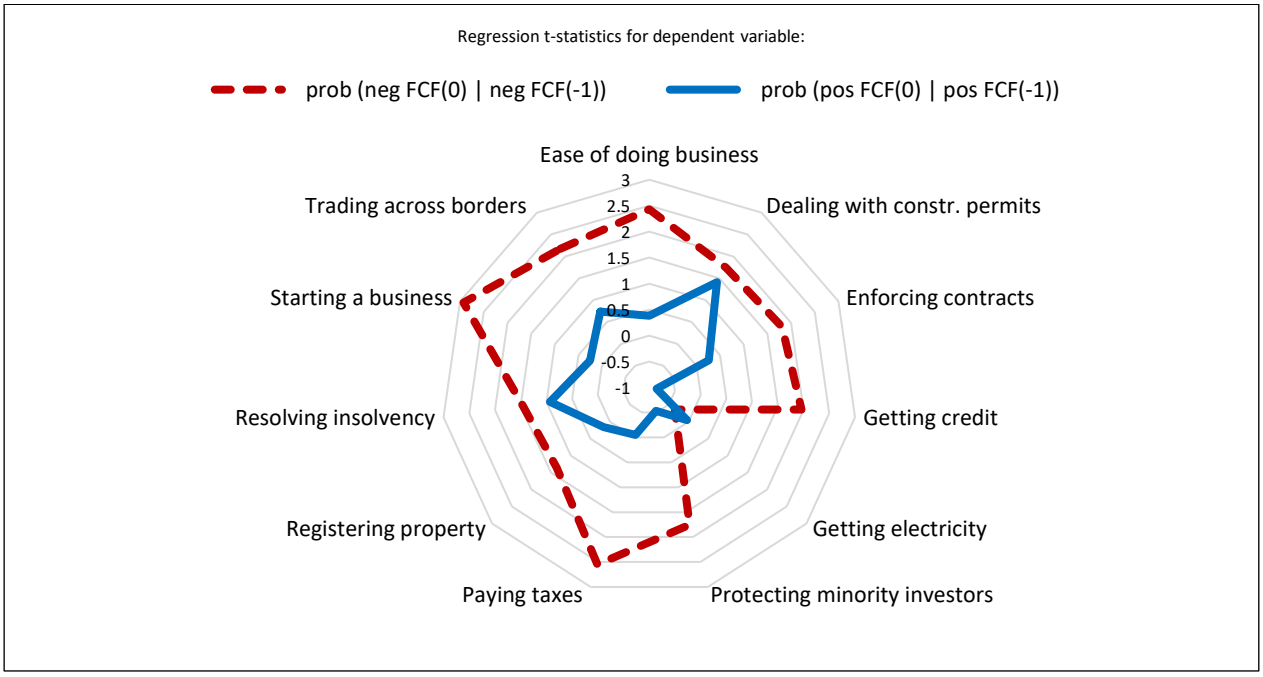


Figure 12. Worldwide Governance Indicators

Panel A of this figure reports the coefficients and t-statistics of the univariate cross-country regression of the FCF beta on each of the World Bank's six Worldwide Governance Indicators (WGIs): https://datacatalog.worldbank.org/search/dataset/0038026/Worldwide-Governance-Indicators. Each Indicator is first averaged within a country over our study period (2000-2018, within which each WGI is available) and then standardized by the cross-country average and standard deviation. As a result, all WGIs have a mean value of zero with a standard deviation of one. The regressions are estimated separately for positive-FCF and negative-FCF firms. Panel B reports the coefficients (top) and t-statistics (bottom) of the univariate cross-country regression of Prob(neg FCF_0), or Prob(neg FCF_0 | neg FCF_{-1}), on the World Bank's six Worldwide Governance Indicators (WGIs). Panel C reports the coefficients (top) and t-statistics (bottom) of the univariate cross-country regression of Prob(neg FCF_0 | neg FCF_{-1}), or Prob(pos FCF_0 | pos FCF_{-1}), on the WGIs. Thus, the results for Prob(neg FCF_0 | neg FCF_{-1}) are the same between Panels B and C. The t-statistics are based on the White (1980) covariance.

Panel A. Univariate regression of FCF beta on WGIs

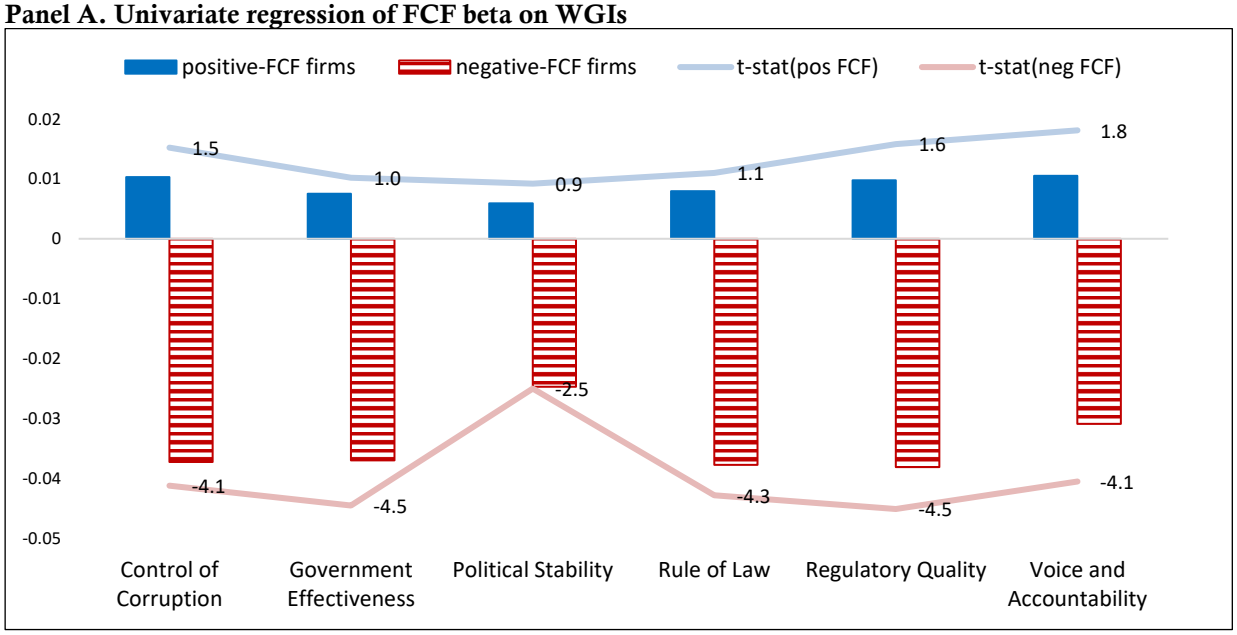
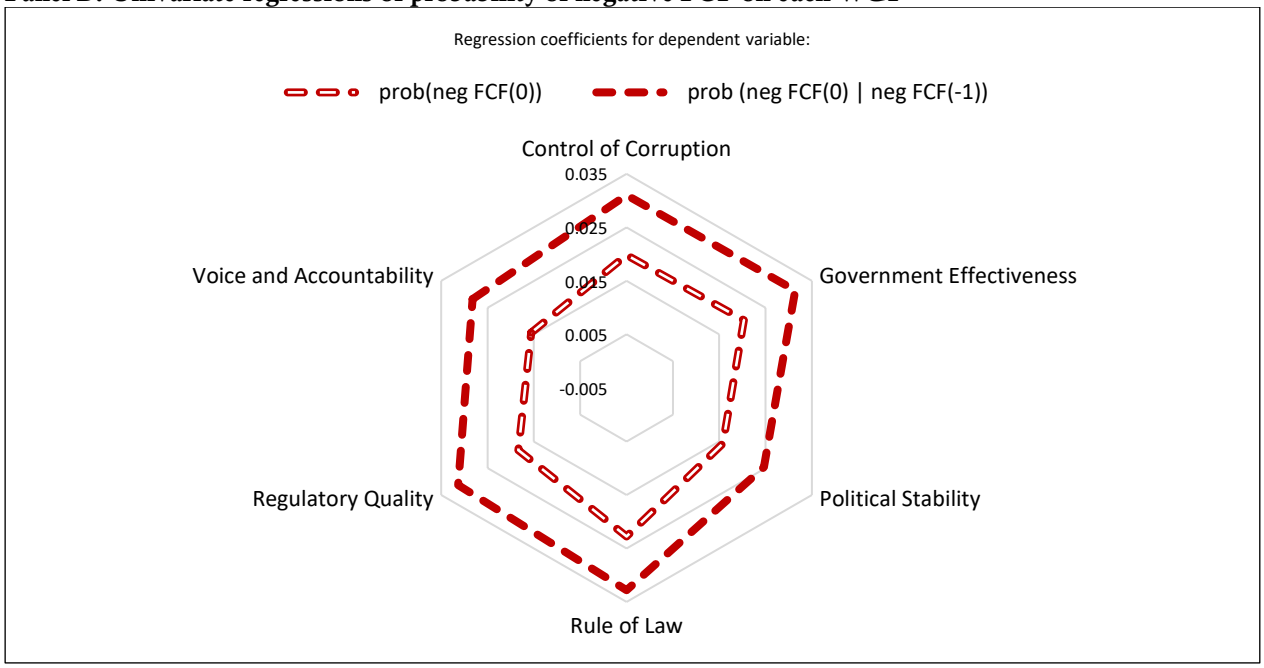


Figure 12. cont.

Panel B. Univariate regressions of probability of negative FCF on each WGI



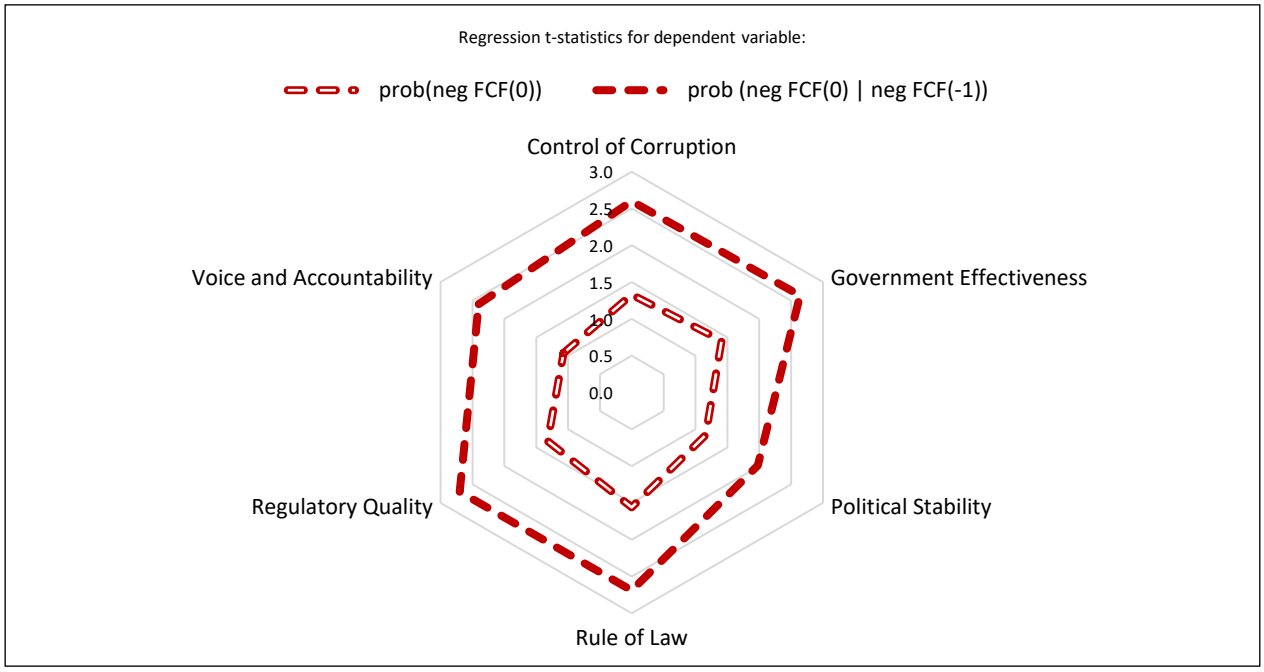


Figure 12. cont.

Panel C. Univariate regressions of conditional probability of positive or negative FCF on each WGI