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Does Going Tough on Banks Make the Going Get Tough? Bank Liquidity Regulations, Capital Requirements, and Sectoral Activity

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Bank Liquidity Regulations, Capital Requirements, and Sectoral Activity

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Abstract

Whether and to what extent tougher bank regulation weighs on economic growth is an open empirical question. Using data from 28 manufacturing industries in 50 countries, we explore the extent to which cross-country differences in bank liquidity and capital levels were related to differences in sectoral activity around the period of the global financial crisis. We find that industries which are more dependent on external finance, in countries where banks had higher liquidity and capital ratios, performed relatively better during the crisis, with regard to investment rates and the creation of new enterprises. This relationship, however, exists only for bank-based systems and emerging market economies. In the pre-crisis period, we find only a marginal link to bank capital. These findings survive a battery of robustness checks and provide some solid support for the tighter prudential measures introduced under Basel III.

JEL Classification Numbers: G01, G28, L6

Keywords: Bank liquidity; bank capital; Basel III; Financial stability; Sectoral activity

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1. Introduction

Financial crises are immensely costly, not only because they may require public funds to revive banks and other financial institutions, but also because they tend to destroy the finance-growth nexus (Klapper and Love 2011; Laeven and Valencia 2013). The latter mainly happens through impairment of the credit supply channel (Kroszner et al. 2007; Dell'Ariccia et al. 2008) or of balance sheets (Eggertsson and Krugman 2012). These costs and the gaps in the regulatory framework exposed by the global financial crisis in 2008–09, motivated policymakers to introduce a new wave of prudential regulations, including the Basel III Accord (henceforth, 'Basel III' or 'the Accord') in 2010.[2] The aim was to improve financial stability and accordingly to mitigate the adverse impact of financial shocks on the real economy.

Basel III imposes more stringent micro-prudential standards for liquidity and capital positions, and also adds a macro-prudential overlay. Higher liquidity and capital levels improve bank stability and reduce the frequency of crises, as well as their impact on growth, but they may simultaneously restrict the ability of banks to lend, or significantly raise the cost of bank lending, and thus come at the cost of slower growth. This potential trade-off implies that the relationship between tighter requirements and real activity may depend on the specific economic conditions. While having more buffers reduces bank losses and contractions in real activity when a systemic shock materializes (Martinez-Miera and Suarez 2014), the real effect of prudential regulations during normal times remains ambiguous.

This paper explores cross-country evidence that can inform us about possible effects of tighter bank regulations on economic activity during both normal and crisis periods. Specifically, we consider whether industrial sectors that are more in need of external finance perform disproportionately better or worse (in terms of capital formation and new business creation) if they are in countries with high bank liquidity/capital levels. We empirically test this as follows. We first use a large bank-level dataset for 50 countries over the period 2000–10, in order to construct bank liquidity and capital indicators as specified in Basel III. We merge these indicators, aggregated to the country level, with data on industry activity. This enables us to analyze the

[2] Basel III builds on the Basel I and Basel II documents. It introduced tighter capital requirements in comparison to Basel I and Basel II, and launched two new liquidity indicators. We discuss the differences between Basel III and Basel I/II in detail in Section 3.1.

association between cross-country differences in bank liquidity and capital levels & activity in 28 manufacturing sectors around the period of the global financial crisis.

We consider two dimensions of sectoral activity: investment rate and growth in the number of establishments. Following Calomiris et al. (2017), the investment rate is defined as gross fixed capital formation divided by output. It provides an indication of how much of the gross product is reinvested in new assets that then promote future productivity and output growth.[3] Second, following Claessens and Laeven (2003), we use growth in the number of establishments to proxy for entrepreneurship and the rate of creation of new businesses—which again is highly correlated with production. Industry growth (that is, growth in value added) results largely from a rise in the investment rate (capital formation) and an increase in the number of establishments (new business creation).[4] Hence, both indicators are a good proxy for sectoral activity in the form of business expansion, capturing the longer-term expectations of enterprises and the forward-looking aspects of output growth.

In order to mitigate the identification problem that usually plagues cross-country regressions, and to provide a more causal interpretation of the findings, our empirical strategy rests on exploring whether sectors that rely more heavily on access to finance perform disproportionately better, if they are located in countries where banks have higher levels of liquidity and capital. If better bank balance sheet positions improve access to finance, and thus promote economic activity, then we would expect this effect to be larger for those industries that depend more on external financing. This conjecture follows the widely-used Rajan and Zingales (1998) approach, for which the empirical specification focuses on the interaction between financial development (a country characteristic) and external finance dependence (an industry characteristic). In our analysis, we interact a proxy for a country's banking-system soundness (liquidity and/or capital level of banks) and a sector's external finance dependence. This interaction term helps us discern whether any link we find between bank liquidity and capitalization and economic activity indicators can be plausibly interpreted as a causal link.

[3] Several studies look at the causal relationship between capital formation and economic growth, see, for instance, De Long and Summers (1991), Qin et al. (2006), and Uneze (2013).

[4] One key dimension that we do not capture directly is productivity growth, given the measurement challenges.

In terms of signs, whether or not tougher bank regulation has a direct positive impact on investment and business creation, remains an open empirical question. More liquidity/capital may spur credit growth and enhance economic activity, including investment in existing establishments and/or reducing the creation of new establishments. For example, higher capital could increase banks' risk-bearing capacity, thus allowing them to create more liquidity (Berger and Sedunov 2017) and consequently supply more credit (Cohen and Scatigna 2016), especially business loans (Buch and Prieto 2014). Alternatively, tougher requirements may impose short-term costs on the economy by motivating banks to reduce lending to non-financial firms, as they hoard or build up more liquidity and capital.

These two effects may both exist, but one may prevail over the other under certain macro-financial conditions. While, during normal economic phases, the cost of tougher regulation may translate into lower activity, during financial crises, safer banks help curb market frictions that drive a wedge between the price of external and internal finance. This in turn lowers the cost of or improves the availability of bank credit, which consequently encourages investment and the formation of new firms.

Similar reasoning applies to what we expect for the sign of the coefficient on the interaction term with a sector's external finance dependence. Sectors that are inherently more dependent on external finance tend to be more constrained in their potential business expansion by financial frictions than sectors with a lower need for external funds (Schnabel and Seckinger 2019). When banks have a higher level of liquidity and capital, financial constraints may become less binding and help financially more dependent sectors grow as fast as or even faster than their less dependent counterparts. Alternatively, higher levels of capital may translate into a tightening of financial constraints for industrial firms. Sectors that are more dependent on external finance should then be affected more in terms of investment rate and establishment growth. In other words, we expect external finance dependence to intensify any direct impact of tighter bank regulation on business expansion.

The main findings are as follows. External-finance-dependent industries in countries where banks had higher levels of liquidity and capital ratios, performed better during the crisis period. Specifically, higher liquidity and capital levels (as measured by net stable funding, total regulatory

capital, and Tier 1 ratios) are all positively associated with a higher rate of investment and higher business creation in external-finance-dependent industries during the crisis period 2008–10. This positive association between bank liquidity/capital levels and sectoral activity is the case only for bank-based financial systems and emerging market economies. But in the pre-crisis period 2000–07, we observe only a marginal link to bank capital (results for liquidity are not statistically significant) and mostly for establishment growth than for investment rate. Economically, moving from a country at the 75th percentile of the distribution of capital (liquidity) position (for example, Azerbaijan) to a country at the 25th percentile (for example, Portugal), the investment rate in more external-finance-dependent industries grew approximately 2% faster than their less dependent counterparts during the crisis, accounting for about 20% of the investment rate in this period.

Our results are robust to several sensitivity checks, including using different econometric models and subsamples. Furthermore, to overcome omitted variables bias, we control for observable characteristics—especially at the country/industry level—that may affect sectoral activity. We then use selection on these observable factors to determine the possibility of our estimates being driven by unobserved heterogeneity across countries/industries. In addition, by applying two different strategies, we address possible reverse causality concerns that the effect could run from sectoral activity to bank liquidity/capital levels. First, we regress the average sectoral activity during the crisis period on pre-crisis values of bank liquidity/capital. The underlying idea is that sectoral activity during the crisis could not affect bank liquidity/capital levels in the pre-crisis period. Second, we use an instrumental variable approach to account explicitly for any remaining endogeneity issues. All these tests indicate that the plausible endogeneity of bank liquidity/capital is unlikely to alter the association we have established between bank liquidity/capital and sectoral activity. Nonetheless, we interpret the results with care and view our findings simply as an interesting correlation between bank liquidity/capital and economic performance.

Thus, our findings do not concur with the argument that Basel III reforms could reduce economic activity by decreasing credit availability and/or increasing the cost of borrowing. Rather, they support the argument that bank buffers increase the resilience of the economy to shocks, which in fact motivated Basel III. The macroeconomic costs of demanding higher liquidity and capital requirements are likely to be negligible, at least in terms of sectoral activity in the form of business expansion, thus supporting the tighter liquidity/capital standards under Basel III.

Before we move onto how our study contributes to the literature, a word of caution on the measurement of bank liquidity and capital ratios is in order. We compute bank liquidity and capital positions based on the Basel III definitions, rather than using traditional liquid asset ratios and quantity-based capital ratios that would be stipulated under the previous accords. In this sense, we are examining how compliance with Basel III definitions—should they have been in effect in the 2000s—is associated with economic activity. This approach is the same as that adopted in a number of other studies (e.g. Yan et al. 2012; Dietrich et al. 2014) and could be interpreted as shedding light on the potential real effects of more stringent requirements that are currently in the process of being implemented (or expectations thereof). Reflecting this interpretation, we use the terms "levels" or "ratios" and "regulations" or "requirements" interchangeably in our paper.

Our study is linked to several strands of the literature. First are the papers that directly investigate the real effects of bank liquidity and capital, as indicated in Basel III.[5] The common point made in these studies is that the costs associated with Basel III are limited and/or transitory (BCBS 2010a; Gambacorta 2011) and that stable banks improve economic growth in the long run (Yan et al. 2012; Angelini et al. 2015). Our paper supports these studies by using disaggregated sectoral data and goes one step further by investigating a specific channel through which higher bank capital/liquidity levels affect economic growth, that is, via fostering entrepreneurship activities.

Second, our study complements others that consider the impact of bank liquidity and capital standards on bank performance and stability. The findings suggest that Basel III compliance changes banks' business models (King 2013), could help them perform better especially during crises (Berger and Bouwman 2013; Demirguc-Kunt et al. 2013), and hence improve financial stability. (Vazquez and Federico 2015). Our paper complements these studies by arguing that the positive impact of Basel III on bank stability may spill over to the real economy by improving sectoral activity in external-finance-dependent industries.

Finally, our paper is also related to those that investigate the impact of tougher regulations on bank lending activities, and consequently on real activity. Banks with more stable funding and those

[5] Others focus on the indirect effects of bank capital (or liquidity) requirements in terms of the cost of financial intermediation (e.g. Allen et al. 2012). In related work with a focus on volatility, Fernández et al. (2016) find that bank stability (not measured by Basel III indicators) decreases economic volatility of financially vulnerable industries.

(continued…)

that are well-capitalized (hypothetically those complying with Basel III) provide more credit to the real economy during financial crises (Cornett et al. 2011; Kapan and Minoiu 2013; Brei et al. 2013).[6] This bank lending channel generates a link between better capitalization and corporate investment (Calomiris and Mason 2003; Sun and Tong 2015). Accordingly, in non-crisis periods, a shock to bank balance sheets matters less for economic growth, while it is more important during a crisis (Levintal 2013). We add to these studies by arguing that sustained lending during financial crises, by banks with higher liquidity/capital levels, may improve investment and firm creation in industrial sectors that are more dependent on external finance.[7]

The remainder of the paper is structured as follows. In Section 2, we provide background on the potential side effects of tougher liquidity and capital regulations, including potential transmission channels. The methodology and model specifications, followed by a description of our data, are presented in Section 3. Section 4 includes the results and related discussion. Finally, we provide a summary and conclusions in Section 5.

2. Background and Hypothesis Development

The Basel III Accord is a comprehensive set of reform measures for strengthening bank regulation, supervision, and risk management. At the heart of the reform is higher regulatory capital (both quantity and quality) together with newly introduced liquidity requirements. The aim is to promote a more flexible banking sector, in order to absorb external shocks and hence decrease the risk of spillovers from the financial to the real sector. Yet, there is an ongoing debate as to whether such requirements really benefit the economy as a whole.

Higher capital requirements may constrain the intermediation role of banks and their contribution to economic activity.[8] Tougher capital rules can usually alter the supply of credit to the economy

[6] See also Gambacorta and Marques-Ibanez (2011), Cornett et al. (2011), Altunbas et al. (2016), and Kim and Sohn (2017) for more about the crucial role of liquidity and capital for bank loan growth.

[7] Our results also complement others that document the importance of bank performance for financially dependent sectors (Liu et al. 2014; Igan et al. 2016; Mirzaei and Moore 2019).

[8] Banks respond to higher capital levels in different ways: reducing dividend payments and increasing retention ratios, raising new stocks, improving operating efficiency, reducing size, and increasing lending spreads.

via four channels: (i) reducing bank income; (ii) decreasing lending; (iii) changing risk-taking behavior; and (iv) reshaping competition in the industry (Martynova 2015; D'Erasmo 2018).

First, stringent capital requirements can reduce bank return on equity (ROE), as the substitution of debt with more expensive equity leads to the increase in net income due to the decline in interest expenses will not be sufficient to maintain the higher return investors require on equity compared to debt. To maintain the level of returns, banks would increase their lending rates. Owing to imperfect substitutability between bank credit and other types of financing, this consequently reduces aggregate credit supply and thus curbs economic activity (King 2010).

Second, banks can meet the higher capital requirements by shifting their asset portfolios and by generating fewer loans (Fang et al. 2018). As a result, and in order to offset the reduction in profitability, banks are then forced to increase their lending rates, thus discouraging applications for loans. These reductions in the supply of and demand for credit, in turn curb spending and investment and ultimately economic activity (Miles et al. 2013; also see Furfine 2000; Roger and Vlček 2011; Boissary and Collard 2016; Fender and Lewrick 2016).

Third, increasing capital standards may reduce incentives to take on more risk, as potential losses to shareholders would be larger in case of default. When banks do not take on more risk, the demand for credit may shift from (regulated) banking firms to (unregulated) shadow banking firms. This may increase risk-taking in the economy as a whole, with rising exposure to financial crises and the associated downside risks to economic growth. Yet, there may be an offsetting force, in that banks' shifting of credit toward less risky assets would generate lower expected returns, reducing charter value, and hence encouraging them to take on *more* risk (Allen and Gale 2004).

Fourth, capital regulations can affect the degree of bank competition. On the one hand, higher capital standards may reduce the share of credit extended by large banks, compared to their smaller counterparts, because large banks usually hold smaller cushions above the required capital ratios (D'Erasmo, 2018). This would reduce the industry concentration level. Rising competition would improve bank efficiency and thus positively affect economic growth. On the other hand, tougher capital requirements may also act as a barrier to entry, especially in the long run, and thus reduce

competition. If the market power of incumbent firms increases, banks may raise their lending rates and thereby reduce economic performance (Hakenes and Schnabel 2011; Dagher et al. 2016).[9]

Overall, these four channels may work in opposing directions, rendering the net effect of more stringent capital requirements on economic activity theoretically ambiguous, and hence, an open, unresolved empirical question.

Concerning liquidity, tougher requirements are also costly, as they discourage investment in risky assets.[10] Higher liquidity requirements force banks to hold more low-yield liquid assets and long-term maturity funds, thus reducing bank revenue. Holding other factors constant, banks would then have to raise lending spreads to maintain targeted long-term ROE (Dietrich et al. 2014; Kauko, 2017). Furthermore, compliance with tighter rules causes a change in business strategies, as banks are forced to pursue a liability-driven asset management strategy, whereby they have to first find stable long-term funding and then attempt to gain market share in lending markets (Allen et al. 2012). Shifting bank funding strategies could have an effect on economic performance if lending to productive projects becomes inadequate. Conversely, if higher liquidity makes banks safer and this is perceived by households as partial deposit insurance, bank deposits may then increase, enhancing core bank resources and thus promoting both lending and economic activity (Agénor 2018).

Our analysis captures the potential effects of higher liquidity and capital standards on economic growth, using two key sectoral activity indicators— the investment rate and growth in the number of establishments[11]—distinguishing sectors according to how firms finance their investments, either by internal funds (less dependent on external financing) or by relying on external sources

[9] Note that the relationship between bank competition and economic performance can be the other way around; more competition may be detrimental to financial stability and growth, because of its impact on profit margins and franchise value (Hellman et al. 2000; Allen and Gale 2004).

[10] Tougher liquidity and capital regulations tend to be complementary. They reinforce each other, as a rise in the share of liquid assets lowers the volume of risky assets per unit of equity, increasing the disciplinary effect of equity (Boissay and Collard 2016). However, the requirements could interact in unexpected ways, reducing the overall benefits for the economy (Distinguin et al. 2013; Covas and Driscoll 2014; Cecchetti and Kashyap 2016, Goel et al. 2017).

[11] These indicators are correlated not only with contemporaneous industry growth, but also with future growth, to the extent that increases in investment rate and the creation of new establishments embody advanced technology and/or new ideas and innovation.

(more dependent on external financing). The first indicator is motivated by the fact that investment is a major channel through which bank regulations and activity would affect the economy. A lower investment rate might reflect the inability of firms to finance investment projects using external sources of finance, such as bank loans. If tighter regulations affect bank lending, the investment rate would be affected, and more so for sectors that are more dependent on external financing. As for the second indicator, growth in the number of establishments is one of the two components of industry growth, the other being growth in the average size of firms (Rajan and Zingales 1998). The latter component is more financially constrained than the former, because existing establishments have access to internal funds. Hence, one would expect growth in new establishments in industries more in need of external finance to be more sensitive to bank liquidity/capital regulations than in less external-finance-dependent industries.

As discussed earlier, the effect of tougher regulations, on the real economy in general and on specific industries, could be either positive or negative during normal times. However, during financial crises, higher liquidity and capital requirements render banks more resilient and able to sustain their activities and thus support economic growth (Albertazzi and Marchetti 2010; Cornett et al. 2011; Puri et al. 2011; Beltratti and Stulz 2012; Kapan and Minoiu, 2013). This relationship is expected to be stronger for more external-finance-dependent sectors (see Popov and Udell 2012, who find that a shock to bank lending is especially important for firms that are financially more constrained, as do Kroszner et al. 2007, Dell'Ariccia et al. 2008, Fernández et al. 2016, and Moore and Mirzaei 2016, who all find that manufacturing sectors that are more dependent on external finance suffer more from banking crises).

Our main hypotheses can then be summarized as:

H1: During a crisis, stricter liquidity regulation and higher capital requirements are positively associated with the investment rate and establishment growth, especially in external-finance-dependent sectors.

H2: During normal times, the relationship between tougher regulations and activity indicators could be either positive or negative, or insignificant, and, if significant, more pronounced in external-finance-dependent sectors.

Before moving onto the empirical analysis, two points are worth mentioning. First, it may be difficult to detect a significant relationship between bank regulatory requirements and *average* sectoral activity. This is because the main channel of transmission is bank lending. Better liquidity/capitalization may benefit the economy as a whole, including through the consumption channel, which may not be fully captured by sectoral patterns of business expansion (indeed, the literature on the link between bank performance and economic growth looks mainly at aggregate measures, such as GDP growth). Second, the literature does not provide much guidance on whether we should expect a difference between the investment rate and establishment growth. With no clear prior, we let the data speak for itself on this point.

3. Model Specification and Data

3.1. Model Specification

Recall that our aim is to measure the effects of bank liquidity and capital requirements on sectoral activity. For this purpose, we examine the relationship between cross-country differences in the levels of bank liquidity and capital positions and the investment rate and creation of new businesses in external-finance-dependent industries relative to others. We focus on cross-industry differences, so that we have some leeway to interpret the findings as a causal link, although we cannot claim to have ruled out all endogeneity concerns (which we discuss in detail in Section 4.3).

We rely on the Rajan and Zingales (1998) model as follows:

$$y_{i,c,t} = \vartheta + \emptyset_1 . Share_{i,c,t-1} + \emptyset_2 . R_{c,t} + \emptyset_3 . \boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \emptyset_4 . FinDev_{c,t} + \emptyset_5 . FinDev_{c,t} \times ExtDep_i + \varepsilon_{i,c,t} \quad (Eq.1)$$

where $y_{i,c,t}$ is an indicator of sectoral activity measured as either the ratio of gross fixed capital formation to output (investment rate) or the growth in the number of establishments (establishment growth) in sector i in country c in year t, following Calomiris et al. (2017), Claessens and Laeven (2003), and Beck and Levine (2002). $Share$ is the share of value-added of sector i in the total value-added by all industries in country c in year $t-1$. By including the lagged share of a sector, we control for a convergence effect: sectors that grew fast in the past might grow more slowly in the future, indicating a negative sign for $\emptyset_1$. $ExtDep$ is external finance dependence at the sectoral

level, calculated using US data. R is an indicator of average bank liquidity or capital ratio in country c in year t.

The main variable of interest is the interaction term $\boldsymbol{R_{c,t} \times ExtDep_i}$. The coefficient $\emptyset_3$ measures the difference between the activity in financially dependent sectors in countries with strong and weak bank liquidity and capital positions. A positive and significant point estimate of $\emptyset_3$ indicates that the sectoral activity of financially dependent industries is stronger in countries with higher levels of bank liquidity/capital—in line with our central hypothesis for the crisis period (*H1*). For the pre-crisis period, we do not predict a particular sign of $\emptyset_3$ (*H2*). As for the direct relationship between bank liquidity/capital and sectoral activity captured by the coefficient on R, $\emptyset_2$, we have a moderate expectation of a positive sign during the crisis and of no particular sign in the pre-crisis period.

$FinDev$ is an indicator of financial development (i.e. sum of domestic credit to the private sector and market capitalization divided by GDP) in country c in year t. To control for differences in financial development levels across countries and for cross-industry differences, given the level of financial development in a country, we add to the specification $FinDev$ and its interaction with the external finance dependence variable ($FinDev \times ExtDep$).

To measure differences across countries in liquidity and capital levels, we use proxies that are hypothetically similar to those in Basel III (instead of the traditionally defined liquid asset ratio or leverage ratios). Note that the Basel III liquidity and capital requirements have not yet been implemented fully, but following previous studies (e.g. Yan et al. 2012; Dietrich et al. 2014), we look back and examine how cross-country differences in bank liquidity and capital levels have related to sectoral activity, which would shed light on the potential real effects of stringent requirements that come into effect in the future.

The Basel III framework developed by the Basel Committee on Banking Supervision (BCBS, 2010b) requires higher quality and levels of capital than was the case under Basel I/II and introduced liquidity requirements.

First, the Accord presents two new liquidity standards: the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR). The LCR is a minimum liquidity requirement, introduced

with the intention to ensure that banks have sufficient high-quality liquid assets that can be converted to cash to cover their liquidity needs in a stress scenario. The NSFR is a longer-term requirement intended to address maturity mismatches over the entire balance sheet. In other words, the LCR and the NSFR are designed to enhance both the short-term and long-term resilience of banks, respectively, against liquidity shocks. In our analysis, we follow BCBS (2010a) and focus on the NSFR as an indicator of bank liquidity, because it is more relevant for long-term economic performance than LCR, and also because it is more straightforward to calculate using available historical financial data.[12] The NSFR seeks to quantify the amount of Required Stable Funding (RSF) for assets, relative to the amount of Available Stable Funding (ASF) via capital and liabilities. RSF takes into account the liquidity characteristics and residual maturities of assets and the contingent liquidity risk arising from off-balance sheet exposures by applying a factor ranging from 100% to 0% to the carrying value of the exposure. For instance, business loans with a residual maturity of 12 months or more have an RSF factor of 100%, meaning that they are illiquid and need to be financed entirely from stable funding. ASF also applies factors to determine the portion of capital and liabilities that will remain with the bank for more than one year. The NSFR, that is, the ratio of ASF to RSF, must be greater than 1.

Second, Basel III increases the minimum requirements for both the quantity and the quality of capital: Common Equity Tier 1 capital from 4% to 4.5%, and Tier 1 capital from 4% to 6%. The overall regulatory capital is left unchanged at 8%.[13] A countercyclical buffer can be activated, depending on the phase of the financial cycle, as can a systemic risk buffer, reflecting whether or not a bank is considered systemically important. In our empirical analysis, we rely on two Basel III risk-based measures of capital: total (Tier 1 and Tier 2) regulatory capital ratio ($Capital^{Total}$)

[12] The calculation of LCR requires data on balance sheets in combination with information on the expected inflows on a 30-day horizon and the portion of liabilities that fall due on a 30-day horizon.

[13] The guidelines for risk-weighted assets involve changes (e.g. advanced approach for operational risk no longer applied and market risk framework modified). However, most of these changes are still in the process of implementation.

(continued…)

and Tier 1 capital ratio ($Capital^{Tier1}$). We assume these ratios to be at least 10.5% and 8.5%, respectively.[14]

Overall, we use three central components of Basel III as our measures of bank regulations: tighter liquidity requirements (NSFR), higher quantity of capital ($Capital^{Total}$), and better quality of capital ($Capital^{Tier1}$). We also run the regressions using the first principal component of these three variables (PCA_ALL).

Following Maskus et al. (2012), all specifications in Eq. (1) contain a full set of sector, country, and year fixed effects (ϑ). ϑ_i denote sectoral dummies to control for sector-specific factors that affect cross-sector activity differentials, such as sectoral R&D; ϑ_c are country dummies that account for time-invariant country-specific features that might drive cross-country differences in sectoral activity, such as the cultural and legal environment; and ϑ_t refer to year dummies that capture global shocks, such as world economic growth or uncertainty. We estimate Eq. (1) using the OLS estimator. Residuals from OLS estimations of panel data may be correlated across industries, resulting in biased standard errors. Thus, we cluster standard errors by industry, and confirm the robustness of the results to clustering at the country level and to double-clustering at the industry and country levels.

One issue with Eq. (1) is the typical problem of endogeneity. While the use of sectoral data somewhat alleviates this concern,[15] reverse causality may exist, because banks that lend to faster-growing sectors are less likely to face loan losses, meaning fewer provisions and thus higher net income and better capitalization.[16] Furthermore, any association we find may be attributable to omitted variables. For instance, banks in more dynamic countries may be healthier, and firms in

[14] These thresholds include a 2.5% capital conservation buffer, which needs to be held in the form of Common Equity Tier 1. Basel III also requires a 3% leverage ratio. Also worth noting that many countries impose higher minimum requirements than those included in the Basel framework. As such, compliance with the Basel III requirement may not necessarily mean that a bank also meets the minimum requirements as established by the responsible regulatory authority.

[15] Reverse causality may not be as severe, because it is unlikely that banks raise their liquidity/capital levels following, for example, a growth in number of establishments in a particular manufacturing sector. Also, since we use US firm-level data to construct the external-finance dependence of each industry, the likelihood that sectoral activity in other countries would affect this industry characteristic and/or its interaction with bank liquidity/capital ratios is to some degree decreased (see. e.g. Maskus et al. 2019).

[16] We thank an anonymous referee for articulating this reverse causality pattern in an intuitive manner.

more dynamic countries may also grow faster. Alternatively, this may be because countries with better institutions have both healthier banks and healthier firms. To mitigate such endogeneity concerns, we employ an instrumental variable (IV) approach and a selection on observables approach (see Section 4.3 for details).

Beside the endogeneity issue, using US industry dependence on external finance as a proxy for other nations may introduce a mismeasurement bias. The features of an industrial sector might vary from nation to nation, and these differences in sectoral features might be correlated with the response variable. Hence, using US industry proxies may introduce an attenuation or an amplification bias. To confirm that our findings are robust to the benchmarking bias, we estimate a variation of Eq. (1) using an IV strategy (see Section 4.2 for these sensitivity tests).

3.2. Data

We use data at the bank, sectoral, and country levels. In this section, we explain the construction and sources of each and provide the summary statistics.

3.2.1. Data on Banks

The source of data for estimating bank liquidity and capital ratios is Bankscope, a comprehensive, international database that includes information on public and private banks. We include all commercial banks, because they are the main providers of funds for manufacturing firms and are subject to Basel III requirements. We obtain data on 1,857 banks from 50 developed and emerging economies over the period 2000 to 2010.[17] The number of countries is restricted by the availability of data for constructing country-level bank liquidity/capital levels and/or the availability of industry data (see Section 3.2.2). The availability of bank-level data is also the reason for starting the time coverage in 2000: most banks do not report risk-adjusted capital ratios before this date.

Regarding bank capital position, we obtain country-level measures as unweighted averages (following Sun and Tong 2015) of $Capital^{Total}$ and $Capital^{Tier1}$ across banks within a given

[17] There are two main benefits of using bank-level data to construct country-level bank variables. First, bank-level data allows us to compute the NSFR, as there is no database that reports this liquidity ratio at the country level. Second, it allows us to identify which type of banks most affect sectoral activity. For example, sectoral activity may be affected more by those banks that are more active in providing business loans.

country. Following Distinguin et al. (2013), quantity capital, $Capital^{Total}$, is defined as the percentage of a bank's total capital (both core Tier 1 and supplementary Tier 2 capital) to its risk-weighted assets. Risk weights are computed using risk-sensitivity ratios as specified under the relevant Basel Accord. Quality capital, $Capital^{Tier1}$, is the ratio of a bank's Tier 1 capital to its total risk-weighted assets. This variable provides further insights into the real effects of bank capital. Note that these two capital ratios tend to place a cap on the growth of overall leverage in the banking sector (Sun and Tong, 2015).

Concerning bank liquidity, we apply the method used by Vazquez and Federico (2015) and Kapan and Minoiu (2013) and compute $NSFR = \frac{Available\ stable\ funding\ (ASF)}{Required\ stable\ funding\ (RSF)} = \frac{\sum_i z_i L_i}{\sum_j z_j A_j}$ where L and A indicate liabilities and assets, respectively, and z stands for weights assigned to specific liabilities and assets. Weights take a value between 0 and 1, where large weights are assigned to more stable sources of funding and to more illiquid assets. The higher the NSFR, the lower the liquidity risk. Note that in order to estimate the NSFR, we have to impose some assumptions on the definitions of ASF and RSF, such as classifications of different liabilities and asset classes, and the weights assigned to these classes. Like capital ratios, we use the average values of computed NSFR across banks within a country. Appendix Table A1 details the components and factor weights.[18]

3.2.2. Data on Industries

The industry data are from the UNIDO Industrial Statistics Database, which contains disaggregated annual data on manufacturing sectors. The UNIDO reports information on value added, output, number of establishments, gross fixed capital formation, and employment. We select 73 industries of mixed 3&4-digit codes. In order to use the industry external-finance-dependence data of Rajan and Zingales (1998), we regroup these 73 industries of ISIC Rev. 3 data into 28 industries of ISIC Rev. 2. The UNIDO database covers 135 countries, although we have to remove 84 countries for which data on our sectoral activity variables (that is, investment rate and

[18] We acknowledge that the computation of the NSFR is sensitive to the assumptions used. The NSFR computed by Vazquez and Federico (2015) is consistent with the formulations in Basel III and applicable to Bankscope data. However, there may be important differences across jurisdictions. Hong et al. (2014), for instance, provide a more tailored calculation of the NSFR for US commercial banks.

(continued…)

establishment growth) and/or bank data for estimating liquidity and capital requirements are not available for the sample period of 2000–10.[19] We further drop the United States, because we use it for industry benchmarking. This leaves us with a sample of 28 industries in 50 countries.

The external finance dependence ($ExtDep$) data for each industry are retrieved from Rajan and Zingales (1998). They define external finance dependence as the share of capital expenditure not financed with internal cash-flow from operations and use US firm-level data to estimate this measure for the different manufacturing sectors. Assuming that financial markets in the US are relatively frictionless, the external-finance-dependence measure based on US firm data reflects an industry's intrinsic features that are relatively stable across space, and which carry over to other countries.

3.2.3. Data on Countries

Information on financial development ($FinDev$) and other country characteristics used in the robustness checks are mainly collected from the World Development Indicators (WDI) database. Appendix Table A2 presents the definition and sources of all variables used in the paper.

3.2.4. Summary Statistics

Table 1 reports information regarding mean values of the key variables by country (Panel A), by sector (Panel B), and by year (Panel C), as well as the summary statistics (Panel D) and correlation matrix (Panel E) for the variables used in the main regressions. Regarding sectoral activity, the country-level average of investment rate ranges from 1.4% (Colombia) to 45.1% (Georgia) while the industry-level average ranges from 6.0% (Wearing apparel, ISIC 322) to 15.3% (Glass products, ISIC 362).[20] The mean and standard deviation of investment rate are at 9% and 12%, respectively, over the sample period 2000–10. For establishment growth, the country-level average

[19] The industry data end in 2010 for two main reasons. First, the UNIDO reports industry data with a lag of several years. Second, most countries have recently moved to ISIC Rev. 4. There is no exact correspondence table converting Rev. 4 to Rev. 3, because, for example, one sector in Rev. 4 corresponds to portions of several sectors in Rev. 3.

[20] To mitigate the effect of outliers, we winsorize the sectoral activity indicators (the dependent variables) at 5% in both tails of the distribution.

ranges from -22.9% (Sri Lanka) to 14.6% (Vietnam) and the industry-level average from -3.9% (Misc. Petroleum and coal products, ISIC 354) to 5.7% (Fabricated metal products, ISIC 381). The mean and standard deviation of establishment growth are at 2% and 22%, respectively, over the sample period. Similarly, averages of bank liquidity and capital levels vary substantially across countries. We observe the highest NSFR in Albania (1.28) and the lowest in Spain (0.66). Macedonia has the highest capital ratios (29.4% for total and 23.2% for Tier 1), while Ireland has the lowest total regulatory capital ratio (10.9%) and Morocco has the lowest Tier 1 ratio (8.8%).

Appendix Table A3 reports the percentage of banks that would have met minimum liquidity/capital requirements under Basel III ("stable banks") and those that would not have ("risky banks"). In terms of liquidity, about 41% of banks in the pre-crisis and 27% during the crisis had $NSFR \geq 1$. Concerning the regulatory total (Tier 1) capital, 79% (68%) of banks in the pre-crisis and 88% (82%) during the crisis period had capital ratios equal to or greater than 10.5% (8.5%). Most banks have capital ratios well above the minimum required, indicating that banks have a precautionary motive. Because of the significant costs often associated with adjusting liquidity and/or increasing capital, banks often prefer to have a large buffer (see Distinguin et al. (2013) for more on the literature that studies why banks build up such buffers). For our analysis, what this means is that the findings should be interpreted in terms of expectations of more stringent regulation, rather than as a test of the Basel III requirements. In other words, banks would be likely to adjust their optimal buffers when faced with, or in anticipation of higher liquidity/capital requirements, even if they would already have met the new minimums required.

Figure 1 displays the bottom and top ten countries in terms of sectoral activity indicators over the 2000–10 period. Emerging market economies are among the best-performing, while most advanced countries are among the worst-performing. To assess whether liquidity and capital ratios are different among these groups, we report the averages of these ratios, observing that there is indeed a pattern linking bank regulatory ratios to sectoral performance. Specifically, the top-performing countries have, on average, more stable banking sectors than their low-performing counterparts, and this is the case for both performance measures. We dig further by exploring whether this pattern differs across industrial sectors. Figure 2 shows the linear fit of the relation between investment rate and external finance dependence in countries with high (>1) and low (<1) NSFR. Sectors that are more dependent on external finance do proportionately better than their

less dependent counterparts in countries where banks have a better liquidity position, but this difference is evident only during the crisis period. In the next section, we examine whether this relationship is statistically significant and whether it also applies to capital ratios.

4. Empirical Results

4.1. Baseline Results

Table 2A reports the regression results where the dependent variable is the investment rate, and Table 2B does the same for establishment growth. In each table, we report three panels of results: whole sample period (2000–10), pre-crisis period (2000–07), and crisis period (2008–10). The estimation is carried out separately for different liquidity and capital measures ($NSFR$, $Capital^{Total}$, $Capital^{Tier1}$, and PCA_ALL).[21]

Table 2A shows that, during the crisis period, the investment rate for financially dependent sectors domiciled in countries where banks have higher levels of liquidity/capital is significantly higher than in countries where banks have lower liquidity/capital. This is revealed by the positive and statistically significant coefficients on the interaction term between proxies of liquidity/capital levels and external finance dependence for the subsample 2008–10 (columns 9–12), consistent with *H1*. This association breaks down in the pre-crisis period. In particular, we find little evidence that countries with a high level of bank liquidity/capital did better in 2000–07; only the interaction term between Tier1 capital ratio (or PCA_ALL) and external finance dependence is positive and statistically significant at the 10% level (columns 5–8).

Interestingly, the direct link between bank capital levels and investment rate is negative (columns 2–3) and this is driven by the pre-crisis period (columns 6–7); during the crisis, there is no significant relationship (columns 10–11).[22] This could be interpreted as an indication that, in normal times, there may be a trade-off between investment growth in the typical manufacturing

[21] There are strong correlations between the three liquidity and capital ratios (see Table 1, Panel E).

[22] There is no significant direct link between bank liquidity levels and the investment rate in either of the subsample periods.

(continued…)

industry, and having well-capitalized banks. The magnitudes are, however, quite small and seem to be fully offset for external-finance-dependent sectors.[23]

Table 2B shows that, during the crisis period, higher liquidity/capital levels are also associated with higher establishment growth in industries that are more financially dependent (columns 9–12). We do not observe a robust significant association between liquidity/capital ratios and establishment growth in financially dependent industries in the pre-crisis period (columns 5–8; only the coefficient on Tier 1 capital is significant, but at marginal levels).

In contrast to the results using investment rate as the dependent variable, the direct link between bank capital levels and establishment growth tends to be positive and significant in both pre-crisis and crisis periods (columns 6, 7, and 10). Notably, the direct link between bank liquidity levels and establishment growth is positive and significant, but only in the crisis period.

Overall, consistent with our conjecture for the crisis period, there is a positive association between tighter prudential regulations and business expansion. This is particularly the case for establishment growth and external-finance-dependent industries. For the pre-crisis period, there is only some statistically weak evidence indicating a positive link between bank capital and, primarily, establishment growth. These results imply that higher bank liquidity/capital requirements could enhance the prospects of young firms in industries that are more reliant on external finance, by shielding them from negative financial shocks during a crisis, more so than by enabling existing firms to invest more. The stronger link in the extensive rather than the intensive margin is consistent with the literature on labor markets (e.g. Blundell et al. 2011).

The estimated relationships are also economically significant. The estimated values for the differential in sectoral activity between more and less external-finance-dependent industries are shown at the bottom of Tables 2A and 2B (Differential in sectoral activity).[24] Following Haltiwanger et al. (2014), we examine the effect of cross-country differences in bank liquidity and

[23] Furthermore, as we show later, these results are not entirely robust to alternative econometric specifications (e.g. clustering the standard errors at a different level or including additional controls, see Table 3).

[24] These are calculated only for the cases where the coefficient of the interaction term is statistically significant and obtained as $\emptyset_3[(R^{75th} - R^{25th})(ExtDep^{90th} - ExtDep^{10th})]$ when not taking into account the direct effect of R and as $\emptyset_2[(R^{75th} - R^{25th})] + \emptyset_3[(R^{75th} - R^{25th})(ExtDep^{90th} - ExtDep^{10th})]$ otherwise. See Eq. (1) for further elaboration on the variables and the coefficients.

capital levels in enhancing sectoral activity, by comparing two industries at the extremes of the distribution by the degree of dependence on external finance. For instance, focusing on the crisis period and using the coefficient of the interaction term ($R \times ExtDep$) in Column 9 (10) of Table 2A, we find that the investment rate for an industry at the 90th percentile of the external finance dependence distribution is 1.8% (1.9%) more than for one at the 10th percentile of the same distribution, when moving from a country with a bank liquidity (capital) level at the 25th percentile, to a country at the 75th percentile. When considering both the coefficient of the interaction term and the coefficient of bank liquidity/capital levels (R), the differential in investment rate is approximately 1.4% (1.3%).[25] Given the sample mean of 9% and standard deviation of 12%, all these figures are economically substantial.

Similarly, using the coefficient of the interaction term in Column 9 (10) of Table 2B and moving from a country with its bank liquidity (capital) level at the 25th percentile to a country at the 75th percentile, we observe that the establishment growth rate during the crisis period for an industry at the 90th percentile of the external finance dependence distribution is about 6.6% (2.9%) more than for one at the 10th percentile of the same distribution. When the coefficient on R is considered as well, the figures increase to 14% (12%). These are again economically meaningful magnitudes, compared to the sample mean of 2% and standard deviation of 22%.

Put within the context of recent literature, these findings suggest that strengthening liquidity and capital regulations could help establish a basis for sustainable economic growth, while at the same time enhancing banking sector stability (Kim and Sohn, 2017). Consistent with the argument that a trade-off between financial stability and higher economic activity may not really be as evident as commonly perceived, we find that well-capitalized banks can promote the creation of new firms both in normal and crisis times, while requesting for more liquidity/capital can provide a boost to financially dependent sectors in bad times and not hurt them in good times. How exactly this takes place could be related to efficiency gains: the higher costs of funding due to tighter regulation can be absorbed by banks through improved efficiency of operation, rather than being passed on to customers via higher lending rates (Allen et al. 2012). From a long-term perspective, banks may

[25] The inclusion of the coefficient on R moderates the differential, because R has a direct negative link to sectoral activity. Note that the coefficient on R is not consistently significant across regression results presented in Tables 2A and 2B.

be able to provide more loans at better terms, because over time they accumulate knowledge and develop more efficient operational structures (Berrospide and Edge 2010; Buch and Prieto 2014; Karmakar and Mok 2015). Alternatively, having sufficient buffers to absorb losses may enable them to take on more risk in the form of loans to new firms or innovative projects, which pay off in the longer run. Alternatively, banks may adjust their capital ratios by increasing retained earnings, rather than by reducing risk-weighted assets, where they could replace riskier loans (e.g. industrial loans) with safer bets (Cohen and Scatigna 2016). Or, the risk of bank runs is reduced when banks have high capital levels, which translates into higher bank credit ratings, lower funding costs, and ultimately lower bank loan rates (Goodhart et al. 2006).

4.2. Sensitivity Analysis

After establishing a positive association between bank liquidity/capital positions and the activity of financially more dependent industries, we now conduct some sensitivity analysis checks to ensure that our results (especially for the crisis period) are not driven by the choice of clustering standard errors, the set of fixed effects included, the use of the US as benchmark, or the impact of other channels (other than external finance dependence).

We start with an alternative clustering of standard errors. In particular, we permit observations to be correlated (i) across countries and (ii) across both sectors and countries. The latter accounts for correlations among different sectors in the same country and different countries in the same sector, following the procedure proposed by Petersen (2009) (see also Thompson 2011). Table 3A reports the results when error terms are clustered at the country level, and Table 3B when they are clustered at sector-country level. The results confirm the main finding from our baseline regressions, namely that investment rate and establishment growth in financially dependent sectors were significantly higher in countries that had banks with better liquidity and capital positions during the global financial crisis. Again, we find some evidence that the interaction term between Tier 1 capital ratio and external finance dependence is also significant in the pre-crisis period. Notably, the coefficient on liquidity/capital itself is not significant at the 1% or 5% level in any of the specifications when errors are clustered at the country or sector-country level.

We next consider whether the results remain the same if we employ different sets of fixed effects. We include industry fixed effects (ϑ_i) and country-year fixed effects (ϑ_{ct}), instead of industry,

country, and year fixed effects, as we do in the baseline. This alternative specification forces us to drop the country-level variables (R and $FinDev$) and retain only the interaction terms. The advantage, however, is that we capture any factors that affect all sectors in a particular country in a given year in the same way, such as GDP growth and inflation. Table 3C reports the results. It is reassuring to note that the magnitudes of the coefficients are almost identical to those in the baseline regressions presented in Tables 2A and 2B. Our main findings for the crisis period remain intact, while the link detected earlier between Tier 1 capital and establishment growth in financially dependent sectors in the pre-crisis period becomes somewhat stronger. We also present the differential in sectoral activity and confirm that the values are comparable to those presented at the bottom of Tables 2A and 2B.

As noted before, a possible problem with using US industry data as a proxy for sectoral dependence on external finance is that this might create bias for our variable of interest ($R_{ct} \times ExtDep_{i,US}$). We examine the robustness of our findings, by employing an IV estimator developed by Ciccone and Papaioannou (2010) and used by many recent studies (e.g. Barone and Cingano 2011; Bassanini and Garnero 2013; Beutler and Grobéty 2019). This alternative method recovers a proxy for external finance dependence that is not specific to a nation and uses it as an instrument for the benchmark-country index of external finance dependence. In particular, we instrument $R_{ct} \times ExtDep_{i,US}$ in Eq. (1) with a two-step strategy. First, we obtain predicted industry slopes $\widehat{\emptyset}_i$ of liquidity/capital levels by estimating the following equation with OLS for all countries in the sample, apart from the one with the highest liquidity/capital position:

$$y_{i,c,t} = \vartheta + \emptyset_i \times R_{c,t} + \varepsilon_{i,c,t}$$

The "actual" external finance dependence could then be gauged (netting out all fixed effects except the sectoral ones) as the predicted external finance dependence for the nation with the highest liquidity/capital position, as:

$$\widehat{ExtDep}_i = \vartheta_i + \widehat{\emptyset}_i \times R_{high}$$

The fitted $\widehat{ExtDep}_i$ will thus not reflect dependence on external finance that is related to specific features of the countries in which industries operate. In the second step, we use $R_{c,t} \times \widehat{ExtDep}_i$ as an instrument for $R_{c,t} \times ExtDep_{i,US}$ in a standard 2SLS procedure.

Regressions presented in Tables 2A and 2B are replicated using this new approach in Table 3D. Note that in most cases, neither the Kleibergen-Paap LM χ^2 nor the first-stage F statistics indicate issues of underidentification or weak instruments. Our main findings for the crisis period are robust to employing this alternative benchmark, with the size of the coefficients on the interaction terms being slightly larger than the size of the corresponding coefficients in Tables 2A and 2B, suggesting the existence of attenuation bias in the OLS estimates.[26] The marginally significant coefficients we had on the interaction term in the pre-crisis period for the case of Tier 1 ratio are no longer significant, but the one on total capital becomes marginally significant when establishment growth is the dependent variable.

As a final sensitivity test, we check whether our baseline results remain unchanged when controlling for two other industry characteristics (other than $ExtDep$) through which bank prudential regulations may be linked to sectoral activity. First, we consider asset tangibility ($Tang$), which is defined as net property, plant, and equipment over total assets. This industry characteristic captures the ability of a firm to pledge its assets (for instance, as collateral) in order to access external finance. Differences in firms' endowments of tangible assets make some sectors much more vulnerable to financial constraints (Manova 2013; Manova et al. 2015). Thus, following Maskus et al. (2012) and more recently Maskus et al. (2019), we include in the model the interactions with $ExtDep$ and $Tang$ simultaneously. If tougher bank regulations affect the availability and cost of external finance, then industries with less tangible assets would be affected more severely. Second, one may expect some sectors to demand more funds from external sources, because they have better growth opportunities and, hence, the external-finance-dependence measure ($ExtDep$) may actually be a proxy for differences in growth opportunities across sectors (Fisman and Love 2007; Bekaert et al. 2007). Regulations might affect sectoral activity via growth opportunities (GO): sectors that have better global growth opportunities would be affected more by tougher bank liquidity/capital standards. This motivates the inclusion of a measure of GO (that is, industry sales growth in the US, taken from Ciccone and Papaioannou 2006) to account for this channel. Table 3E shows the results. The main findings remain intact to controlling for these two

[26] We confirm that the combined impact of R and $R * ExtDep$ is also larger, by considering both the coefficient on R and the interaction term, and evaluating the combined impact as we move from the 25th to the 75th percentile for both R and $ExtDep$.

alternative channels. Specifically, the interaction terms between all bank liquidity/capital ratios and external finance dependence remain positive and statistically significant during the crisis period. In the pre-crisis period, we again find a marginal association between Tier 1 and investment rate.

4.3. Addressing Endogeneity Issues

4.3.1. Omitted Variable Bias

Although the use of country fixed effects in the baseline regressions (and country-year fixed effects in Table 3C) to some extent allows controlling for any financial/macroeconomic shocks directly affecting sectoral activity, it could be the case that other factors correlated with access to finance, also affect sectoral outcomes through external finance dependence and other industry characteristics. This may lead to omitted variable bias.

We check the robustness of the results by adding six control variables. First, stability of the banking sector is an important factor for real sector performance (Kroszner et al. 2007). Thus, we add a proxy for bank stability (the Zscore) and its interaction with $ExtDep$. Second, the degree of bank competition is an important determinant of growth (Claessens and Laeven 2005). Accordingly, we include a proxy for bank competition (the Boone indicator) and its interaction with $ExtDep$. Third, firms domiciled in countries with stronger property rights invest more in intangible assets than in fixed assets (Claessens and Laeven 2003). Thus, we enter a proxy for property rights and its interaction with a proxy for sector-specific intangible intensity. Fourth, skill-intensive sectors grow faster, if they are located in countries with a more skilled labor force (Ciccone and Papaioannou 2009). Thus, we enter a proxy for a human development index and its interaction with a proxy for the skill intensity of each sector. Fifth, industries that are more dependent on short-term financing (liquidity) may benefit more during crisis periods if banks are more stable (Raddatz 2006). Hence, we include an interaction term between the bank liquidity/capital ratio and a proxy for liquidity. Finally, to account for macroeconomic stability, we include a proxy for inflation and its interaction with $ExtDep$. Appendix Table A2 contains the definitions and sources of all these control variables.

Table 4 reports the results, Panel I for the pre-crisis period and Panel II for the crisis period. Consistent with our findings so far, the interaction term for all liquidity/capital ratios during the crisis period remains positive and statistically significant. We also find a positive and statistically significant coefficient for the interaction term when considering Tier 1 capital ratio in the pre-crisis period.

While the control variables provide a considerable amount of country/industry-level information, they may not account fully for all relevant factors, and omitted variable bias may still exist. To mitigate this concern further, we use selection on these observable factors to determine the possibility that our estimates are being driven by unobserved heterogeneity across countries/industries (Altonji et al. 2005). This approach computes how much greater the influence of unobservable factors needs to be, relative to observables, to completely explain away the positive relationship between the interaction of bank liquidity/capital levels and the activity of financially dependent sectors. Following Nunn and Wantchekon (2011), we use the ratio of $\emptyset_3^f/(\emptyset_3^r - \emptyset_3^f)$ to compare the coefficient without a restricted set of controls $\emptyset_3^r$ (those reported in Columns 5–12 of Tables 2A and 2B) to the coefficient with a full set of controls $\emptyset_3^f$ (those reported in Columns 1–8 of Table 4). The higher the ratio, the larger the impact on $\emptyset_3$ must be, relative to observed variables, in order to explain away the results. The results, presented at the bottom of Table 4 when the interaction term of interest is statistically significant, show that all of the eight computed ratios for the crisis period, and the four ratios for the pre-crisis period, are either greater than (threshold value of) unity or negative. The negative ratios imply that controls even strengthen the results. Thus, it seems implausible that our estimates can be fully attributed to omitted variables.

4.3.2. Reverse Causality

If firms are unable to meet their debt obligations (because of a shock to the demand side), then bank non-performing loans will increase. This lowers bank net income and capital, and, because of minimum capital requirements, decreases bank lending and consequently sectoral activity (Blum and Hellwig 1995). Banks that lend to stronger firms would not face this problem, and better sectoral performance would translate into stronger bank balance sheets, including higher liquidity and capital levels. Therefore, causality may then be the other way around.

Our use of sectoral data, as well as our focus on one particular channel through which higher bank liquidity/capital levels affect sectoral activity (that is, via external finance dependence), only partially could address this issue. To mitigate reverse causality concerns further, we employ two different empirical strategies as follows.

As our first strategy, we consider a cross-sectional analysis (rather than panel data analysis). Specifically, we consider whether sectoral activity during the global financial crisis is associated with pre-crisis levels of bank liquidity and capital, assuming it is unlikely that sectoral activity during the crisis period affected bank liquidity/capital in the pre-crisis period. We therefore modify Eq. (1) and apply the following model:

$$y_{i,c,Crisis} = \vartheta + \emptyset_1 . Share_{i,c,Pre} + \emptyset_2 . \boldsymbol{R_{c,Pre}} \times \boldsymbol{ExtDep_i} + \emptyset_3 . FinDev_{c,Pre} \times ExtDep_i + \varepsilon_{i,c,Crisis} .$$

where the dependent variable is average sectoral activity during the crisis period. $Share$, R, and $FinDev$ are defined as before, except that they are now expressed as averages over the pre-crisis period. All specifications contain a full set of sector and country fixed effects (ϑ). Table 5A reports the results. We find that financially dependent industries generally performed better during the crisis period if they were located in countries where banks had a better position in terms of liquidity and capital during the pre-crisis period (which is defined as 2000–07 in Panel I, as 2005–07 in Panel II, and 2006–07 in Panel III, to ensure that the results are robust). The results are statistically significant with one exception: when we take the averages over 2000–07, the association between bank capital and establishment growth is positive but not significant.

As our second strategy, and to address any remaining endogeneity issue, we use an instrumental variable approach. We need instruments that are correlated with bank liquidity/capital levels, but uncorrelated with sectoral activity beyond their link with bank performance and other growth determinants (exclusion restriction). Informed by the literature (and bound by data availability), we identify two candidates, namely information sharing and legal rights in credit markets.

The presence of high-quality credit information and the effectiveness of collateral and bankruptcy laws mitigate problems of adverse selection and asymmetric information between borrowers and lenders (Brown et al. 2009). Thus, better credit-information sharing and stronger legal rights improve access to finance for creditworthy borrowers and reduce the risk and cost of default. This

in turn is reflected in bank net income and consequently bank liquidity and capital positions. Indeed, empirically, greater information sharing is associated with higher bank profitability and lower bank risk (Houston et al. 2010), lower default rates (Japelli and Pagano 2002), better prediction of default probability (Kallberg and Udell 2003), improved availability of small business loans (Berger and Frame 2007), and less corruption in lending (Barth et al. 2009). Furthermore, stronger creditor rights are associated with less risk-taking by banks (Houston et al. 2010).[27] Overall, information sharing and legal rights in credit markets are correlated with bank liquidity and capital through their effect on credit risk and bank performance. Furthermore, they are unlikely to affect sectoral activity through channels other than the bank performance channel.

Following Houston et al. (2010) and based on the World Bank ''Doing Business'' database, we consider three variables in order to measure information sharing among lenders. The first two indicate whether an information-sharing agency (public registry or private bureau) exists. The third variable is the depth of credit information, which measures rules affecting the scope, accessibility, and quality of credit information available through either public or private credit registries. As a proxy for legal rights, we select the "strength of legal rights index," which measures the protection of rights of borrowers and lenders through a country's collateral and bankruptcy laws.

We also instrument our measure of financial development ($FinDev$) and its interaction with $ExtDep$. If $FinDev$ is endogenous and is not instrumented, then the coefficient on $R \times ExtDep$ will be inconsistent. Dropping $FinDev$ and its interaction with $ExtDep$ from the specification could instead result in omitted variable bias. Relying on a vast literature that emphasizes a significant effect of a country's legal system on the development of the financial sector (La Porta et al. 1998) and following Beutler and Grobéty (2019) and Turco et al. (2019), we use legal origins and rule of law as instruments. Exact variable definitions and sources are in Appendix Table A2.

Table 5B presents the results from the second-stage regression.[28] The Hansen test fails to reject, at the 1% level, the validity of the *overidentification* exclusion restrictions. The only exception is the

[27] Others provide evidence on the effects of institutions on bank capital ratios via market discipline, or a reduction in market power (Fonseca and González 2010; Alraheb et al. 2019).

[28] Note that the data on instrumental variables are available only starting in year 2005.

value for the pre-crisis period, but we do not find any significant results for the main interest variable for this period. Also, the KP-LM χ^2 test and the first-stage F statistics show satisfactory values for the *underidentification* and *weak identification* issues. The IV estimator confirms our baseline results, which financially dependent industries located in countries with banks with higher levels of liquidity and capital, performed better during the global financial crisis. The magnitude of the coefficients is even larger than those reported in Tables 2A and 2B for the OLS case.[29]

4.4. Additional Tests

We conduct a number of additional tests to deepen our understanding of how bank liquidity and capital are associated with sectoral activity.

First, we check whether our results remain intact if we exclude too-big-to-fail banks or if we exclude those that are less active in industrial loans. For the former exercise, we drop the banks with total assets greater than USD 50 billion.[30] These banks may not change their behavior as much as their smaller counterparts in response to tighter regulations, if they expect access to public assistance in case of distress, or if they may be in a better position to raise capital and preserve liquidity, owing to easier access to the lender of last resort. As shown in Table 6A, the results are similar to those presented in Tables 2A and 2B, thereby our findings are not driven by a few big banks. For the latter exercise, we focus only on banks whose industrial-loans-to-total-loans ratio exceeds 50%. These banks arguably have a stronger link with industrial sectors, and their response to tighter regulations may be more relevant for sectoral activity. One reason why we do not find a strong association of bank liquidity/capital with sectoral activity in the pre-crisis period might be

[29] As another check, we follow Granger (1969) as recently applied by Berger and Sedunov (2017). We run regressions of country-level averages of bank liquidity/capital on (weighted and unweighted) average country-level sectoral activity. Appendix Table A4 presents the results in four panels, depending on the selected dependent variable. Across the 48 regressions, only two coefficients are statistically significant at the 5% level (and three more at the 10% level). Thus, we do not find any strong evidence that sectoral activity Granger-causes bank liquidity/capital positions. We also use lags (one and two) of R and $R \times ExtDep$ as instruments in an alternative IV strategy. The results (not reported for the sake of brevity) are similar to the baseline findings. The results of an additional robustness test, applying OLS (as our baseline regression) but using a one-year lag of R, are quantitatively similar.

[30] This definition of too-big-to-fail follows Berger and Bouwman (2013) and is consistent with US supervisory guidelines defining large or systemically important banks. The results are robust if we instead use a country-specific threshold and exclude banks in each country that have a market share (in terms of total assets) greater than 10%.

because we include all banks, regardless of how active they are in the industrial loan markets. As shown in Table 6B, the results remain robust for the crisis period. In the pre-crisis period, we again find a positive association of Tier 1 capital with establishment growth, and also a marginally significant positive association between bank liquidity and investment rate.

Next, we examine whether the findings are the same if we consider only those banks that meet minimum liquidity and capital requirements. As most banks would have already met the minimum, especially on the capital front, differences in liquidity/capital positions beyond the minimum thresholds may not be meaningful. We check this by calculating the country-level aggregate liquidity/capital measures, considering only those banks that meet the minimum requirements. As shown in Table 6C, our main findings regarding capital are robust. This suggests that, even for stable banks, an increase in bank capital standards (or expectation thereof) may be positively associated with sectoral activity. The coefficient on the NSFR is not significant however, implying that additional liquidity beyond a certain point is not associated with stronger investment or firm creation activity.

Finally, we explore whether the results remain the same, depending on the level of importance of the banking sector in the overall financial system in a country. Most emerging market economies have bank-based rather than market-based systems (Tadesse 2002). When banks face tougher regulations and thus a shock to bank lending materializes, firms located in market-based systems and/or advanced economies could use alternative sources of finance and thus sustain their business plans. It is also plausible that advanced economies have banks that already meet the Basel III requirements, so that banks are seen as more stable, while tougher liquidity/capital requirements for banks in emerging market economies are more likely to be seen as a signal of stability that manifests itself in higher investment rates and greater establishment growth—generating a relationship not evident in advanced economies.[31] For this exercise, we split the sample into market-based versus bank-based systems (depending on whether the ratio of domestic credit to private sector to market capitalization is smaller or larger than the cross-country median) and advanced versus emerging market economies. We anticipate $\emptyset_3$ to be positive and significant for

[31] We thank an anonymous referee for this interpretation of potential differences between advanced economies and emerging market economies.

bank-based systems and for emerging market economies. Tables 7A and 7B present the results, which are in line with this conjecture. The positive association between bank liquidity/capital and sectoral activity during the crisis is manifested only for countries in which banks play a more important role than the capital market.

These results indicate that bank-based systems (and emerging market economies) stand to gain more benefits, in terms of sectoral activity, from tougher liquidity and capital requirements. This is in line with Morganti and Garofalo (2019), who find that the long-run impact of financial development on growth is greater in bank-oriented economies. Moreover, this finding sheds some light on the channels of transmission; Cohen and Scatigna (2016) find that, when banks face higher capital requirements, those in advanced economies raise lending spreads to enhance their capital position, while banks in emerging market economies expand faster (by lending more) to do so.

5. Conclusion

The economic costs associated with financial crises, and the public funds needed to recapitalize distressed banks, can be massive. Policymakers believe that improving bank liquidity and capital positions can reduce such costs. However, there might be a trade-off related to tougher regulatory requirements. In this paper, we examine the relationship between bank liquidity and capital levels and sectoral activity indicators. We find that an increase in bank liquidity and capital is associated with stronger sectoral activity in the form of a higher investment rate and the creation of new establishments in financially dependent industries. This relationship is strong during the crisis period, but only marginal in the pre-crisis period.

Our paper contributes to the literature on the role of prudential regulations in the context of a trade-off between financial stability and economic activity, and to the debate on the reaction of economic performance to bank balance sheet shocks in the context of a new wave of regulations (Ma 2017). Our results may justify the argument that banks can sustain their lending and support economic activity during a crisis period, provided they maintain appropriate liquidity and capital levels, without any significant negative consequences for lending and economic activity in normal times. Such a conclusion should be treated with caution, however, because of the relatively short windows of pre-crisis and crisis periods and other empirical limitations in quantifying regulatory effects. We view our findings as a remarkable correlation, rather than as a causal effect between

prudential regulations and economic performance. Future research should aim at establishing a causal link directly from regulatory actions, and to understand the transmission channels in greater detail, including through an understanding of why the relationships may differ for the investment rate as opposed to establishment growth.

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Table 1: Summary statistics of sectoral activity, bank liquidity and capital indicators, and financial development over the period 2000-2010

Panel A: by country

			Sectoral activity			Bank liquidity and capital ratios				
Row	Country	Code	Investment rate	Estab. growth	Share	# of banks	NSFR	$Capital^{Total}$ (%)	$Capital^{Tier1}$ (%)	FinDev (%)
1	Albania	ALB	0.130	0.109	0.080	12	1.28	18.81	11.88	19.1
2	Australia	AUS	0.043	0.070	0.038	31	0.81	12.66	9.76	224.1
3	Austria	AUT	0.052	0.005	0.040	71	0.91	16.89	11.35	140.4
4	Azerbaijan	AZE	0.120	0.030	0.036	26	1.16	23.25	18.44	11.4
5	Belgium	BEL	0.049	0.004	0.039	30	0.84	17.01	11.02	149.3
6	Bulgaria	BGR	0.103	0.030	0.041	21	1.05	17.50	14.53	59.8
7	Chile	CHL	0.056	-0.014	0.047	28	1.06	20.64	16.17	179.9
8	Colombia	COL	0.014	0.035	0.039	20	0.90	12.43	9.73	63.2
9	Cyprus	CYP	0.054	-0.040	0.037	16	0.92	16.46	12.98	281.9
10	Denmark	DNK	0.053	-0.026	0.042	36	0.89	15.31	13.71	240.9
11	Ecuador	ECU	0.073	-0.001	0.036	19	1.04	14.88	9.95	28.8
12	Estonia	EST	0.162	0.006	0.040	8	0.90	15.12	11.78	98.0
13	Finland	FIN	0.045	-0.012	0.040	26	0.91	13.97	10.54	185.2
14	France	FRA	0.038	-0.020	0.038	120	0.80	15.45	17.19	180.5
15	Georgia	GEO	0.451	0.114	0.038	15	1.10	25.91	21.94	23.8
16	Germany	DEU	0.041	-0.012	0.037	132	0.93	13.26	9.09	160.5
17	Hungary	HUN	0.078	0.007	0.037	25	0.72	12.98	9.91	76.3
18	India	IND	0.068	0.019	0.036	66	1.00	14.24	10.52	103.4
19	Indonesia	IDN	0.263	0.032	0.037	79	1.13	22.12	16.21	53.4
20	Ireland	IRL	0.044	-0.019	0.044	14	0.88	10.89	9.57	214.1
21	Israel	ISR	0.053	0.064	0.046	12	0.96	12.32	9.11	170.1
22	Italy	ITA	0.046	-0.029	0.037	83	1.02	17.08	14.98	133.5
23	Japan	JPN	0.037	-0.036	0.036	139	0.90	10.99	8.76	264.0
24	Korea	KOR	0.072	0.024	0.036	16	1.15	14.11	10.90	198.6
25	Kuwait	KWT	0.105	0.007	0.041	16	0.96	18.37	16.21	170.2
26	Latvia	LVA	0.121	0.050	0.040	20	0.97	16.86	10.40	73.7
27	Lithuania	LTU	0.085	0.095	0.036	10	0.79	15.40	12.53	59.1
28	Luxembourg	LUX	0.052	-0.009	0.045	64	1.05	18.70	15.30	312.8
29	Macedonia	MKD	0.050	0.019	0.042	15	1.20	29.43	23.23	38.2
30	Malaysia	MYS	0.044	0.076	0.036	52	1.01	15.82	13.68	249.3
31	Malta	MLT	0.070	-0.024	0.038	11	1.11	18.28	13.63	161.3
32	Mexico	MEX	0.032	0.137	0.037	46	0.95	19.29	17.23	44.7
33	Morocco	MAR	0.077	0.012	0.036	15	0.90	13.47	8.75	105.4
34	Netherlands	NLD	0.052	0.003	0.041	30	0.83	17.73	16.20	265.8
35	New Zealand	NZL	0.043	-0.017	0.093	17	0.71	13.41	10.82	162.6
36	Norway	NOR	0.041	0.056	0.040	17	0.75	14.05	11.90	102.4
37	Oman	OMN	0.414	0.027	0.038	8	0.87	16.42	14.27	68.5
38	Poland	POL	0.067	-0.008	0.037	43	0.77	19.72	12.89	63.2
39	Portugal	PRT	0.072	-0.023	0.040	26	0.73	12.77	9.81	192.6
40	Romania	ROM	0.352	0.033	0.039	25	1.10	22.77	19.45	39.8
41	Singapore	SGP	0.054	0.045	0.043	20	0.90	23.42	18.96	280.0
42	Slovak Rep.	SVK	0.087	0.099	0.040	12	1.04	17.88	18.16	38.1
43	Slovenia	SVN	0.070	-0.034	0.037	15	0.91	14.57	12.32	87.5
44	Spain	ESP	0.048	-0.021	0.037	51	0.66	16.53	11.88	238.9
45	Sri Lanka	LKA	0.040	-0.229	0.042	17	0.90	12.60	11.00	47.8
46	Sweden	SWE	0.050	0.017	0.040	27	0.85	17.37	17.18	214.1
47	Tanzania	TZA	0.126	-0.011	0.052	33	1.09	19.81	18.64	14.8
48	Turkey	TUR	0.083	0.032	0.041	35	1.06	19.48	17.41	53.3
49	UK	GBR	0.040	-0.045	0.037	139	1.00	19.68	13.04	296.4
50	Vietnam	VNM	0.397	0.146	0.036	48	0.92	15.51	10.56	73.4

Table 1: continued

Panel B: by industry

Row	Industry	ISIC	Sectoral activity: Investment rate	Sectoral activity: Estab. growth	Share	ExtDep
1	Food products	311	0.079	0.009	0.129	0.14
2	Beverages	313	0.111	0.035	0.044	0.08
3	Tobacco	314	0.066	-0.015	0.023	-0.45
4	Textiles	321	0.100	0.006	0.032	0.40
5	Wearing apparel, except footwear	322	0.060	-0.006	0.031	0.03
6	Leather and fur products	323	0.068	-0.036	0.005	-0.14
7	Footwear, except rubber or plastic	324	0.066	-0.022	0.006	-0.08
8	Wood products, except furniture	331	0.088	0.012	0.032	0.28
9	Furniture and fixtures, excel. metal	332	0.080	0.035	0.024	0.24
10	Paper products	341	0.109	0.028	0.029	0.18
11	Printing and publishing	342	0.092	-0.004	0.039	0.20
12	Industrial chemicals	351	0.112	0.016	0.053	0.25
13	Other chemical product	352	0.093	0.027	0.060	0.22
14	Petroleum refineries	353	0.077	0.038	0.089	0.04
15	Misc. petroleum and coal products	354	0.088	-0.039	0.004	0.33
16	Rubber products	355	0.098	0.026	0.013	0.23
17	Plastic products	356	0.099	0.039	0.034	1.14
18	Pottery, china, earthenware	361	0.117	0.000	0.003	-0.15
19	Glass and products	362	0.153	0.035	0.017	0.53
20	Other non-metalic mineral products	369	0.113	0.028	0.048	0.06
21	Iron and steel	371	0.083	0.033	0.039	0.09
22	Non-ferrous metals	372	0.079	0.025	0.025	0.01
23	Fabricated metal products	381	0.095	0.057	0.067	0.24
24	Non-electrical machinery	382	0.090	0.029	0.075	0.45
25	Electrical machinery	383	0.090	-0.001	0.078	0.77
26	Transport equipment	384	0.088	0.036	0.069	0.31
27	Professional and scientific equipment	385	0.103	0.012	0.021	0.96
28	Other manufacturing	390	0.077	-0.006	0.009	0.47

Panel C: by year

Year	Sectoral activity: Investment rate	Sectoral activity: Estab. growth	Bank liquidity and capital ratios: NSFR	Capital^{Total} (%)	Capital^{Tier1} (%)
2000	0.103	0.025	0.96	19.24	14.34
2001	0.103	0.025	1.02	18.93	14.69
2002	0.100	0.016	0.99	18.68	14.86
2003	0.088	-0.001	1.00	18.95	15.21
2004	0.087	0.041	0.98	16.29	13.26
2005	0.093	0.036	0.94	15.67	12.44
2006	0.087	0.019	0.92	15.64	12.73
2007	0.092	0.009	0.92	15.86	12.86
2008	0.088	-0.003	0.88	15.82	13.10
2009	0.078	-0.015	0.90	16.85	13.77
2010	0.097	0.018	0.91	17.28	13.92

Panel D: summary statistics of all variables

Variable	N	Mean	S.D.	Min.	0.25	Mdn.	0.75	Max.
Investment rate	11058	0.090	0.120	0.010	0.03	0.05	0.09	0.62
Establishment growth	11907	0.020	0.220	-1.000	-0.05	0.00	0.05	1.99
Share	12396	0.040	0.050	-0.030	0.01	0.02	0.05	0.62
ExtDep	28	0.240	0.320	-0.450	0.05	0.23	0.37	1.14
NSFR	510	0.950	0.180	0.170	0.85	0.93	1.04	1.91
Capital^{Total} (%)	472	17.050	4.980	9.060	13.22	16.29	19.49	39.60
Capital^{Tier1} (%)	443	13.610	4.580	6.400	10.23	12.56	16.06	31.08
FinDEv (%)	550	134.280	91.640	4.670	52.94	127.70	195.56	508.42

Panel E: correlation matrix

	Investment rate	[i]	[ii]	[iii]	[iv]	[v]
Establishment growth [i]	0.091***					
Share [ii]	-0.018*	0.032***				
NSFR [iii]	0.164***	0.052***	0.022**			
Capital^{Total} [iv]	0.239***	0.063***	0.005	0.560***		
Capital^{Tier1} [v]	0.234***	0.064***	0.002	0.454***	0.829***	
FinDev	-0.326***	-0.084***	-0.002	-0.291***	-0.254***	-0.176***

Table 2: Bank liquidity and capital regulation and sectoral activity – Baseline

The table presents the results from the regression
$y_{i,c,t} = \vartheta + \emptyset_1.Share_{i,c,t-1} + \emptyset_2.R_{c,t} + \emptyset_3.\boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \emptyset_4.FinDev_{c,t} + \emptyset_5.FinDev_{c,t} \times ExtDep_i + \varepsilon_{i,c,t}$.

$y_{i,c,t}$ is the ratio of gross fixed capital formation to output (investment rate) or growth in number of establishments of sector i in country c in year t. $Share$ is the share of value added of industry i to total value added of all industries in country c in year $t-1$. R is an indicator for bank liquidity or capital ratio ($NSFR$, $Capital^{Total}$, $Capital^{Tier1}$) in country c in year t. $FinDev$ is an indicator of financial development (i.e. sum of domestic credit to private sector and market capitalization as % of GDP) in country c in year t. $ExtDep$ is external financial dependence of each industry. All specifications contain a full set of sector, country and year fixed effects (ϑ). The differential in sectoral activity measures (in percentage terms) how much faster an industry at the 90th percentile level of external dependence grows with respect to an industry at the 10th percentile level when it is located in a country at the 75th percentile of bank liquidity/capital levels rather than in one at the 25th percentile.

For detailed definition of variables, see Table A2. The statistical inferences are based on robust standard errors (associated t-values reported in parentheses) clustered at the industry level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Our sample includes 28 industries with three-digit ISIC, Rev.2 for 50 countries. Sample size varies across regression specifications because not all variables are available for all industries, all countries or all years.

Table 2A: Investment rate

	Whole sample (2000-2010)				Pre-crisis (2000-2007)				Crisis (2008-2010)			
	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Share (-1)	-0.0273	-0.0360	-0.0412	-0.0406	-0.0363	-0.0510	-0.0601*	-0.0595*	0.0091	0.0082	0.0085	0.0091
	(-1.00)	(-1.29)	(-1.41)	(-1.38)	(-1.16)	(-1.58)	(-1.85)	(-1.82)	(0.21)	(0.19)	(0.19)	(0.21)
R	-0.0073	-0.0010***	-0.0007*	-0.0034**	-0.0029	-0.0010***	-0.0010**	-0.0041**	-0.0261	-0.0011	0.0002	-0.0017
	(-0.77)	(-3.11)	(-1.97)	(-2.66)	(-0.34)	(-3.11)	(-2.35)	(-2.65)	(-0.62)	(-1.00)	(0.13)	(-0.41)
R × ExtDep	0.0274	0.0019*	0.0018**	0.0073**	0.0183	0.0013	0.0016*	0.0062*	0.1118**	0.0040**	0.0032**	0.0106**
	(1.41)	(1.94)	(2.13)	(2.14)	(1.03)	(1.30)	(1.73)	(1.73)	(2.49)	(2.49)	(2.11)	(2.42)
FinDev	0.0001***	0.0001***	0.0001***	0.0001***	0.0002***	0.0002***	0.0002***	0.0002***	0.0001	0.0001	0.0001	0.0001
	(3.91)	(3.44)	(3.01)	(2.80)	(4.52)	(4.26)	(3.94)	(3.90)	(1.69)	(1.16)	(0.68)	(0.91)
FinDev × ExtDep	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001	-0.0001*	-0.0001*	-0.0001
	(0.23)	(0.66)	(0.30)	(0.64)	(0.69)	(0.96)	(0.80)	(1.03)	(-1.35)	(-1.75)	(-1.88)	(-1.55)
Constant	0.1320***	0.1435***	0.1206***	0.1166***	0.1397***	0.1582***	0.1295***	0.1222***	0.1008**	0.1013***	0.0857***	0.0918***
	(9.90)	(8.85)	(7.80)	(7.91)	(7.45)	(6.86)	(7.58)	(7.66)	(2.50)	(4.30)	(4.00)	(5.63)
Fixed Effects												
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28	28	28	28	28
N	9796	8970	8519	8492	7670	6844	6393	6366	2126	2126	2126	2126
Adj. R^2	0.648	0.646	0.656	0.657	0.653	0.651	0.663	0.663	0.662	0.663	0.662	0.663
Differential in sectoral activity (%)												
without direct effect of R		1.09	0.95	1.33			1.00	1.20	1.81	1.92	1.28	1.58
with direct effect of R		0.46	0.55	0.65			0.31	0.33	1.35	1.34	1.37	1.30

Table 2B: Establishment growth

	Whole sample (2000-2010)				Pre-crisis (2000-2007)				Crisis (2008-2010)			
	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Share (-1)	-0.0357	-0.0513	-0.0470	-0.0465	-0.0319	-0.0533	-0.0492	-0.0488	-0.0723	-0.0806	-0.0803	-0.0780
	(-0.84)	(-1.00)	(-0.99)	(-0.98)	(-0.79)	(-1.17)	(-1.16)	(-1.16)	(-0.63)	(-0.72)	(-0.72)	(-0.69)
R	0.0101	0.0026***	0.0021***	0.0085***	-0.0074	0.0024***	0.0030***	0.0084***	0.4124***	0.0167***	0.0038	0.0454***
	(0.68)	(3.65)	(4.66)	(4.63)	(-0.38)	(3.50)	(6.83)	(4.43)	(4.96)	(5.53)	(1.26)	(5.31)
R × ExtDep	0.0942***	0.0016	0.0024***	0.0101***	0.0380	0.0009	0.0014*	0.0055	0.4102***	0.0061**	0.0090**	0.0260***
	(3.85)	(1.67)	(3.08)	(4.84)	(1.09)	(0.86)	(2.02)	(1.65)	(3.93)	(2.16)	(2.66)	(2.94)
FinDev	0.0000	0.0001	0.0001	0.0001	-0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0007*	-0.0001	-0.0005
	(0.09)	(0.85)	(0.93)	(1.54)	(-0.35)	(-0.50)	(0.01)	(0.51)	(-0.04)	(-1.79)	(-0.16)	(-1.32)
FinDev × ExtDep	0.0000	-0.0000	-0.0000	-0.0000	0.0001	0.0001	0.0000	0.0000	-0.0001	-0.0003**	-0.0003**	-0.0002*
	(0.41)	(-0.15)	(-0.41)	(-0.04)	(0.83)	(0.74)	(0.42)	(0.61)	(-1.13)	(-2.37)	(-2.29)	(-1.96)
Constant	0.1121***	0.1088***	0.1765**	0.1992***	0.1305***	0.0985***	0.2073*	0.2398**	-0.2450**	-0.0995	0.1327	0.2084***
	(3.21)	(3.16)	(2.77)	(3.18)	(3.66)	(3.51)	(1.79)	(2.07)	(-2.12)	(-1.02)	(1.61)	(2.99)
Fixed Effects												
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28	28	28	28	28
N	10440	9746	9316	9289	7923	7229	6799	6772	2517	2517	2517	2517
Adj. R^2	0.057	0.061	0.063	0.066	0.056	0.055	0.058	0.061	0.122	0.120	0.111	0.120
Differential in sectoral activity (%)												
without direct effect of R	1.63		1.27	1.85			0.87		6.64	2.93	3.60	3.88
with direct effect of R	1.82		2.50	3.55			2.92		13.99	11.74	5.28	11.31

Table 3: Bank liquidity and capital regulation and sectoral activity – Robustness tests

The table presents the results from the regression
$y_{i,c,t} = \vartheta + \emptyset_1.Share_{i,c,t-1} + \emptyset_2.R_{c,t} + \emptyset_3.\boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \emptyset_4.FinDev_{c,t} + \emptyset_5.FinDev_{c,t} \times ExtDep_i + \varepsilon_{i,c,t}$.

$y_{i,c,t}$ is the ratio of gross fixed capital formation to output (investment rate) or growth in number of establishments of sector i in country c in year t. $Share$ is the share of value added of industry i to total value added of all industries in country c in year $t-1$. R is an indicator for bank liquidity or capital ratio (*NSFR*, $Capital^{Total}$, $Capital^{Tier1}$) in country c in year t. $FinDev$ is an indicator of financial development (i.e. sum of domestic credit to private sector and market capitalization as % of GDP) in country c in year t. $ExtDep$ is external financial dependence of each industry. All specifications contain a full set of sector, country and year fixed effects (ϑ).

For detail definition of variables see Table A2. The statistical inferences are based on robust standard errors (associated t-values reported in parentheses) clustered at the industry level (unless otherwise specified). ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Our sample includes 28 industries with three-digit ISIC, Rev.2 for 50 countries. Sample size varies across regression specifications because not all variables are available for all industries, all countries or all years.

Table 3A: Robust to clustering at the country level

	Investment rate				Establishment growth			
	NSFR	$Capital^{Total}$	$Capital^{Tier1}$	PCA_All	NSFR	$Capital^{Total}$	$Capital^{Tier1}$	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Pre-crisis (2000-2007)							
Share (-1)	-0.0363	-0.0510	-0.0601	-0.0595	-0.0319	-0.0533	-0.0492	-0.0488
	(-1.16)	(-1.49)	(-1.65)	(-1.63)	(-0.85)	(-1.44)	(-1.37)	(-1.35)
R	-0.0029	-0.0010	-0.0010	-0.0041	-0.0074	0.0024	0.0030	0.0084
	(-0.14)	(-1.12)	(-1.06)	(-1.29)	(-0.18)	(1.09)	(1.45)	(1.33)
R × ExtDep	0.0183	0.0013	0.0016	0.0062	0.0380	0.0009	0.0014*	0.0055*
	(0.76)	(1.13)	(1.37)	(1.41)	(1.09)	(0.62)	(1.84)	(1.84)
FinDev	0.0002*	0.0002*	0.0002	0.0002	-0.0000	-0.0000	0.0000	0.0000
	(1.82)	(1.77)	(1.62)	(1.56)	(-0.11)	(-0.15)	(0.00)	(0.17)
FinDev × ExtDep	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000
	(0.59)	(0.94)	(0.73)	(0.97)	(1.13)	(1.01)	(0.58)	(0.79)
Constant	0.1397***	0.1582***	0.1295***	0.1222***	0.1305**	0.0985*	0.2073***	0.2398***
	(5.15)	(8.25)	(4.83)	(6.34)	(2.18)	(1.91)	(5.70)	(7.83)
N	7670	6844	6393	6366	7923	7229	6799	6772
Adj. R^2	0.653	0.651	0.663	0.663	0.056	0.055	0.058	0.061
	Crisis (2008-2010)							
Share (-1)	0.0091	0.0082	0.0085	0.0091	-0.0723	-0.0806	-0.0803	-0.0780
	(0.20)	(0.18)	(0.18)	(0.20)	(-0.82)	(-0.90)	(-0.91)	(-0.88)
R	-0.0261	-0.0011	0.0002	-0.0017	0.4124	0.0167	0.0038	0.0454
	(-0.71)	(-1.08)	(0.17)	(-0.46)	(1.39)	(1.66)	(0.36)	(1.46)
R × ExtDep	0.1118*	0.0040**	0.0032**	0.0106**	0.4102***	0.0061**	0.0090**	0.0260***
	(1.93)	(2.40)	(2.05)	(2.30)	(3.48)	(2.08)	(2.40)	(2.82)
FinDev	0.0001	0.0001	0.0001	0.0001	-0.0000	-0.0007	-0.0001	-0.0005
	(1.32)	(1.29)	(0.83)	(0.98)	(-0.02)	(-0.74)	(-0.07)	(-0.62)
FinDev × ExtDep	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0003**	-0.0003**	-0.0002*
	(-0.52)	(-0.61)	(-0.63)	(-0.56)	(-1.02)	(-2.28)	(-2.27)	(-1.94)
Constant	0.1008***	0.1013***	0.0857***	0.0918***	-0.2450	-0.0995	0.1327	0.2084***
	(3.47)	(6.30)	(7.20)	(8.59)	(-0.89)	(-0.59)	(1.06)	(6.95)
N	2126	2126	2126	2126	2517	2517	2517	2517
Adj. R^2	0.662	0.663	0.662	0.663	0.122	0.120	0.111	0.120
Fixed Effects								
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (country)	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28

Table 3B: Robust to a two-way clustering at the both industry and country levels

	Investment rate				Establishment growth			
	NSFR	$Capital^{Total}$	$Capital^{Tier1}$	PCA_All	NSFR	$Capital^{Total}$	$Capital^{Tier1}$	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Pre-crisis (2000-2007)							
Share (-1)	-0.0363	-0.0510	-0.0601	-0.0595	-0.0319	-0.0533	-0.0492	-0.0488
	(-1.00)	(-1.34)	(-1.51)	(-1.49)	(-0.73)	(-1.18)	(-1.20)	(-1.19)
R	-0.0029	-0.0010	-0.0010	-0.0041	-0.0074	0.0024	0.0030	0.0084
	(-0.14)	(-1.17)	(-1.05)	(-1.32)	(-0.19)	(1.12)	(1.51)	(1.40)
R × ExtDep	0.0183	0.0013	0.0016	0.0062	0.0380	0.0009	0.0014**	0.0055**
	(0.79)	(1.00)	(1.25)	(1.28)	(1.00)	(0.78)	(2.62)	(2.23)
FinDev	0.0002*	0.0002*	0.0002	0.0002	-0.0000	-0.0000	0.0000	0.0000
	(1.84)	(1.78)	(1.64)	(1.58)	(-0.11)	(-0.15)	(0.00)	(0.17)
FinDev × ExtDep	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000
	(0.58)	(0.89)	(0.72)	(0.95)	(0.84)	(0.76)	(0.43)	(0.61)
Constant	0.1397***	0.1582***	0.1295***	0.1222***	0.1305**	0.0985**	0.2073***	0.2398***
	(5.55)	(7.88)	(4.69)	(6.13)	(2.16)	(2.02)	(5.52)	(7.23)
N	7670	6844	6393	6366	7923	7229	6799	6772
Adj. R^2	0.653	0.651	0.663	0.663	0.056	0.055	0.058	0.061
	Crisis (2008-2010)							
Share (-1)	0.0091	0.0082	0.0085	0.0091	-0.0723	-0.0806	-0.0803	-0.0780
	(0.17)	(0.15)	(0.16)	(0.17)	(-0.62)	(-0.70)	(-0.70)	(-0.68)
R	-0.0261	-0.0011	0.0002	-0.0017	0.4124	0.0167*	0.0038	0.0454
	(-0.61)	(-1.01)	(0.15)	(-0.41)	(1.46)	(1.73)	(0.38)	(1.53)
R × ExtDep	0.1118*	0.0040**	0.0032**	0.0106**	0.4102***	0.0061***	0.0090***	0.0260***
	(1.95)	(2.31)	(1.99)	(2.24)	(3.62)	(2.76)	(2.67)	(3.09)
FinDev	0.0001	0.0001	0.0001	0.0001	-0.0000	-0.0007	-0.0001	-0.0005
	(1.40)	(1.20)	(0.76)	(0.91)	(-0.02)	(-0.75)	(-0.07)	(-0.63)
FinDev × ExtDep	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001***	-0.0003***	-0.0003***	-0.0002***
	(-0.57)	(-0.68)	(-0.69)	(-0.62)	(-2.86)	(-16.16)	(-9.96)	(-9.50)
Constant	0.0902***	0.0909***	0.0751***	0.0812***	-0.3060	-0.1587	0.0850	0.1465**
	(2.64)	(5.64)	(6.17)	(7.97)	(-1.05)	(-0.81)	(0.62)	(2.44)
N	2126	2126	2126	2126	2517	2517	2517	2517
Adj. R^2	0.662	0.663	0.662	0.663	0.122	0.120	0.111	0.120
Fixed Effects								
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (two ways)	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28

Table 3C: Robust to a different set of fixed effects

The table presents the results from the regression
$y_{i,c,t} = \vartheta + \emptyset_1 . Share_{i,c,t-1} + \emptyset_2 . \boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \emptyset_3 . FinDev_{c,t} \times ExtDep_i + \varepsilon_{i,c,t}.$

All variables are analogous to the Eq. (1), except that all specifications now contain a new set of fixed effects (ϑ): sector (ϑ_i) and country*year (ϑ_{ct}) fixed effects.

	Investment rate				Establishment growth			
	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Tota}	Capital^{Tier1}	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Pre-crisis (2000-2007)							
Share (-1)	-0.0344	-0.0481	-0.0586*	-0.0579*	-0.0700*	-0.0755*	-0.0710*	-0.0711*
	(-1.24)	(-1.68)	(-2.04)	(-2.00)	(-1.85)	(-1.83)	(-1.90)	(-1.92)
R × ExtDep	0.0233	0.0014	0.0016	0.0065	0.0410	0.0011	0.0018***	0.0062**
	(1.14)	(1.29)	(1.68)	(1.67)	(1.54)	(1.16)	(2.83)	(2.13)
FinDev × ExtDep	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000	-0.0000	0.0000
	(0.76)	(0.99)	(0.82)	(1.07)	(0.31)	(0.28)	(-0.06)	(0.12)
Constant	0.1716***	0.1760***	0.1007***	0.1031***	0.1765	0.1856	0.2398*	0.2424*
	(3.79)	(4.00)	(7.10)	(7.14)	(1.30)	(1.36)	(2.01)	(2.04)
N	7670	6844	6393	6366	7923	7229	6799	6772
Adj. R^2	0.695	0.692	0.705	0.705	0.381	0.363	0.380	0.380
Differential in sectoral activity (%)							0.72	0.92
	Crisis (2008-2010)							
Share (-1)	0.0072	0.0064	0.0065	0.0072	-0.0830	-0.0916	-0.0898	-0.0884
	(0.17)	(0.15)	(0.15)	(0.17)	(-0.75)	(-0.83)	(-0.82)	(-0.81)
R × ExtDep	0.1119**	0.0040**	0.0033**	0.0106**	0.3994***	0.0063**	0.0093**	0.0260**
	(2.46)	(2.46)	(2.08)	(2.39)	(3.53)	(2.08)	(2.54)	(2.73)
FinDev × ExtDep	-0.0001	-0.0001	-0.0001*	-0.0001	-0.0001	-0.0003**	-0.0003**	-0.0002*
	(-1.30)	(-1.69)	(-1.82)	(-1.49)	(-1.16)	(-2.28)	(-2.23)	(-1.91)
Constant	0.0904***	0.0949***	0.0990***	0.1045***	0.0564	0.0936	0.0923	0.1082*
	(3.66)	(3.89)	(4.09)	(4.34)	(0.88)	(1.55)	(1.53)	(1.85)
N	2126	2126	2126	2126	2517	2517	2517	2517
Adj. R^2	0.662	0.663	0.661	0.662	0.257	0.253	0.255	0.255
Differential in sectoral activity (%)	2.06	2.42	2.05	2.06	6.47	3.02	3.72	3.88
Fixed Effects								
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country*Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28

Table 3D: Robust to the appropriateness of US benchmark

The table presents the results from the regression
$y_{i,c,t} = \vartheta + \emptyset_1.Share_{i,c,t-1} + \emptyset_2.R_{c,t} + \emptyset_3.\boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \emptyset_4.FinDev_{c,t} + \emptyset_5.FinDev_{c,t} \times ExtDep_i + \varepsilon_{i,c,t}.$

All variables are analogous to the Eq. (1), except that regressions are estimated using 2SLS. To construct the instrumental variable we use the procedure outlined in Ciccone and Papaioannou (2010), as explained in the text.

	Investment rate				Establishment growth			
	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Pre-crisis (2000-2007)							
Share (-1)	-0.0337	-0.0321	-0.0503	-0.0369	-0.0318	-0.0395	-0.0464	-0.0391
	(-1.13)	(-0.80)	(-1.35)	(-0.82)	(-0.80)	(-0.89)	(-1.11)	(-0.94)
R	-0.0651	-0.0034	-0.0024*	-0.0146	-0.0092	0.0007	0.0025***	0.0037
	(-0.96)	(-1.26)	(-1.67)	(-1.48)	(-0.37)	(0.63)	(3.81)	(1.13)
R × ExtDep	0.2511	0.0101	0.0068	0.0452	0.0447	0.0072*	0.0031	0.0233**
	(0.98)	(1.04)	(1.40)	(1.41)	(0.68)	(1.74)	(1.35)	(2.00)
FinDev	0.0002***	0.0002**	0.0002***	0.0001*	-0.0000	-0.0001	-0.0000	0.0000
	(2.73)	(2.28)	(3.22)	(1.80)	(-0.36)	(-0.82)	(-0.06)	(0.19)
FinDev × ExtDep	0.0001	0.0002	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001
	(0.97)	(1.03)	(1.24)	(1.35)	(0.83)	(1.29)	(0.62)	(1.15)
N	7670	6844	6393	6366	7923	7229	6799	6772
KP-LM χ2 - (p-value)	0.22	0.23	0.12	0.16	0.07	0.08	0.05	0.07
1** st **Stage F test								
R × ExtDep	1.64	1.59	3.20*	2.57	4.63**	3.87*	7.57***	7.07**
	Crisis (2008-2010)							
Share (-1)	0.0184	0.0142	0.0179	0.0186	-0.0552	-0.0719	-0.0676	-0.0643
	(0.42)	(0.32)	(0.39)	(0.42)	(-0.49)	(-0.67)	(-0.62)	(-0.59)
R	-0.1181*	-0.0039**	-0.0031*	-0.0098*	0.2310**	0.0066	-0.0054	0.0264*
	(-1.67)	(-2.47)	(-1.72)	(-1.89)	(2.27)	(0.55)	(-0.64)	(1.92)
R × ExtDep	0.4584**	0.0152***	0.0166**	0.0447***	1.0915***	0.0478	0.0459	0.1041**
	(2.24)	(2.79)	(2.57)	(2.65)	(2.96)	(0.99)	(1.56)	(2.05)
FinDev	0.0001	0.0001	0.0001	0.0001	-0.0001	-0.0008**	-0.0001	-0.0006
	(1.44)	(0.93)	(0.50)	(0.64)	(-0.16)	(-2.06)	(-0.25)	(-1.50)
FinDev × ExtDep	0.0001	-0.0000	-0.0000	0.0000	0.0001	-0.0001	-0.0002	-0.0001
	(0.57)	(-0.02)	(-0.04)	(0.48)	(0.81)	(-1.00)	(-1.62)	(-0.43)
N	2126	2126	2126	2126	2517	2517	2517	2517
KP-LM χ2 - (p-value)	0.03	0.02	0.02	0.02	0.05	0.37	0.21	0.12
1** st **Stage F test								
R × ExtDep	4.90**	6.53**	6.42**	6.10**	9.69***	0.79	2.00	3.73*
Fixed Effects								
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28

Table 3E: Robust to other channels

The table presents the results from the regression
$y_{i,c,t} = \vartheta + \emptyset_1.Share_{i,c,t-1} + \emptyset_2.R_{c,t} + \emptyset_3.\boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \sum \mu.R_{c,t} \times C_i + \emptyset_4.FinDev_{c,t} + \emptyset_5.FinDev_{c,t} \times ExtDep_i + \sum \nabla.FinDev_{c,t} \times C_i + \varepsilon_{i,c,t}$.

All variables are analogous to the Eq. (1), except that regressions now include new interaction terms. C is other industry characteristics: $Tang$ is a proxy for sector tangibility and GO is a proxy for sector growth opportunity. For detail definition of variables see Table A2.

	Investment rate				Establishment growth			
	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Pre-crisis (2000-2007)							
Share (-1)	-0.0422	-0.0567	-0.0654*	-0.0647*	-0.0267	-0.0490	-0.0465	-0.0444
	(-1.30)	(-1.68)	(-1.91)	(-1.87)	(-0.66)	(-1.10)	(-1.11)	(-1.08)
R	-0.0014	0.0002	0.0003	-0.0003	0.0294	0.0037**	0.0037***	0.0122**
	(-0.08)	(0.23)	(0.52)	(-0.09)	(0.87)	(2.21)	(2.96)	(2.44)
R × ExtDep	0.0213	0.0014	0.0014*	0.0059*	0.0300	0.0005	0.0009	0.0036
	(1.11)	(1.41)	(1.92)	(1.75)	(1.09)	(0.49)	(1.00)	(1.17)
R × Tang	0.0095	-0.0037	-0.0047**	-0.0125	-0.1577*	-0.0057	-0.0043	-0.0201*
	(0.20)	(-1.49)	(-2.41)	(-1.46)	(-1.84)	(-1.55)	(-1.48)	(-1.79)
R × GO	-0.1192	-0.0035	0.0037	0.0017	0.3019	0.0121	0.0159	0.0607
	(-0.47)	(-0.25)	(0.33)	(0.03)	(0.96)	(0.75)	(1.06)	(1.22)
FinDev	0.0003***	0.0003***	0.0003***	0.0003***	-0.0001	-0.0001	-0.0000	0.0000
	(5.04)	(4.85)	(4.82)	(4.48)	(-0.52)	(-0.71)	(-0.16)	(0.24)
FinDev × ExtDep	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
	(0.80)	(1.18)	(0.92)	(1.27)	(0.55)	(0.44)	(0.28)	(0.38)
FinDev × Tang	-0.0002	-0.0003*	-0.0003*	-0.0003*	0.0001	0.0001	0.0000	0.0000
	(-1.43)	(-1.88)	(-1.85)	(-1.86)	(0.30)	(0.37)	(0.20)	(0.04)
FinDev × GO	-0.0000	-0.0001	-0.0000	-0.0001	0.0005	0.0005	0.0002	0.0004
	(-0.03)	(-0.14)	(-0.01)	(-0.18)	(0.53)	(0.69)	(0.29)	(0.46)
Constant	0.1413***	0.1649***	0.1362***	0.1248***	0.1406***	0.1038***	0.2102*	0.2392**
	(7.89)	(7.36)	(8.56)	(8.25)	(3.94)	(3.55)	(1.83)	(2.07)
N	7670	6844	6393	6366	7923	7229	6799	6772
Adj. R^2	0.653	0.651	0.664	0.664	0.056	0.055	0.058	0.061
	Crisis (2008-2010)							
Share (-1)	0.0103	0.0093	0.0100	0.0105	-0.0571	-0.0697	-0.0689	-0.0651
	(0.24)	(0.22)	(0.23)	(0.24)	(-0.48)	(-0.59)	(-0.58)	(-0.55)
R	0.0208	0.0007	0.0020	0.0035	0.4796***	0.0203***	0.0047	0.0524***
	(0.29)	(0.39)	(0.93)	(0.57)	(3.67)	(6.28)	(1.33)	(5.43)
R × ExtDep	0.1342***	0.0050***	0.0042***	0.0134***	0.4333***	0.0071*	0.0094**	0.0284**
	(2.91)	(3.33)	(2.82)	(3.16)	(3.20)	(1.91)	(2.16)	(2.43)
R × Tang	-0.0738	-0.0027	-0.0025	-0.0073	-0.1631	-0.0088	-0.0021	-0.0167
	(-0.55)	(-0.73)	(-0.64)	(-0.67)	(-0.60)	(-1.23)	(-0.27)	(-0.80)
R × GO	-0.6798	-0.0301*	-0.0287	-0.0804*	-0.5193	-0.0263	-0.0073	-0.0557
	(-1.44)	(-1.82)	(-1.63)	(-1.75)	(-0.28)	(-0.56)	(-0.14)	(-0.37)
FinDev	0.0001	0.0001	0.0001	0.0001	-0.0002	-0.0009**	-0.0002	-0.0007
	(1.32)	(1.05)	(0.63)	(0.85)	(-0.42)	(-2.16)	(-0.56)	(-1.68)
FinDev × ExtDep	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0002**	-0.0002**	-0.0002*
	(-0.97)	(-1.27)	(-1.48)	(-1.07)	(-0.86)	(-2.26)	(-2.17)	(-1.76)
FinDev × Tang	-0.0000	0.0000	0.0000	0.0000	0.0006	0.0006	0.0006	0.0006
	(-0.05)	(0.03)	(0.01)	(0.00)	(1.22)	(1.22)	(1.24)	(1.22)
FinDev × GO	-0.0004	-0.0004	-0.0003	-0.0005	-0.0005	-0.0003	-0.0003	-0.0004
	(-0.66)	(-0.83)	(-0.60)	(-0.84)	(-0.27)	(-0.16)	(-0.14)	(-0.22)
Constant	0.1058**	0.1048***	0.0880***	0.0916***	-0.2408*	-0.0944	0.1290	0.2025***
	(2.53)	(4.19)	(3.84)	(5.68)	(-2.03)	(-0.95)	(1.54)	(2.93)
N	2126	2126	2126	2126	2517	2517	2517	2517
Adj. R^2	0.662	0.664	0.662	0.663	0.121	0.120	0.111	0.119
Fixed Effects								
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28

Table 4: Robustness to observables

The table presents the results from the regression
$y_{i,c,t} = \vartheta + \emptyset_1.Share_{i,c,t-1} + \emptyset_2.R_{c,t} + \emptyset_3.\boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \emptyset_4.FinDev_{c,t} + \emptyset_5.FinDev_{c,t} \times ExtDep_i + \emptyset_6.X_{c,t} \times Characteristic_i + \varepsilon_{i,c,t}$.

All variables are analogous to the Eq. (1), except that now the model includes a set of control variables ($X_{c,t} \times Characteristic_i$), as explained in the text.

Panel I: Pre-crisis (2000-2007)

	Investment rate				Establishment growth			
	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Pre-crisis (2000-2007)							
Share (-1)	-0.0492	-0.0590	-0.0640*	-0.0653*	-0.0578	-0.0700	-0.0582	-0.0575
	(-1.39)	(-1.70)	(-1.84)	(-1.87)	(-1.35)	(-1.47)	(-1.33)	(-1.34)
R	0.0246	-0.0023**	-0.0026***	-0.0056	-0.0765*	0.0006	0.0018	0.0003
	(0.78)	(-2.11)	(-2.88)	(-1.52)	(-2.04)	(0.56)	(1.66)	(0.08)
R × ExtDep	0.0176	0.0013	0.0014**	0.0051	0.0500*	0.0013	0.0019**	0.0076***
	(0.93)	(1.39)	(2.15)	(1.69)	(1.76)	(1.49)	(2.49)	(3.03)
FinDev	0.0002***	0.0002***	0.0002***	0.0002***	-0.0000	-0.0000	0.0000	0.0001
	(4.46)	(4.02)	(3.70)	(3.68)	(-0.44)	(-0.35)	(0.23)	(0.70)
FinDev × ExtDep	0.0000	0.0001	0.0001	0.0001	0.0001	0.0000	-0.0000	0.0000
	(0.94)	(1.16)	(1.32)	(1.43)	(0.77)	(0.31)	(-0.02)	(0.12)
Bank Stability	-0.0005*	-0.0001	-0.0003	-0.0003	0.0004	-0.0001	-0.0006	-0.0005
	(-1.94)	(-0.43)	(-0.86)	(-0.87)	(0.80)	(-0.18)	(-1.01)	(-0.86)
Stability × ExtDep	0.0004	0.0006	0.0005	0.0006	0.0004	0.0006	0.0004	0.0004
	(1.11)	(1.45)	(1.21)	(1.28)	(0.63)	(0.85)	(0.56)	(0.61)
Bank Competition	-0.0093	-0.0087	-0.0069	-0.0070	0.0311*	0.0564**	0.0486**	0.0479**
	(-1.70)	(-1.05)	(-1.21)	(-1.24)	(1.71)	(2.47)	(2.27)	(2.24)
Competition × ExtDep	0.0219	0.0331*	0.0176	0.0187	-0.0182	-0.0367	-0.0485	-0.0473
	(1.69)	(1.72)	(1.30)	(1.35)	(-0.40)	(-0.71)	(-1.08)	(-1.06)
Property Right	0.0003*	0.0003**	0.0006***	0.0006***	-0.0007*	-0.0004	0.0003	0.0002
	(2.00)	(2.16)	(3.23)	(3.23)	(-1.79)	(-0.93)	(0.63)	(0.45)
Right × Intangibility	0.0006	0.0005	0.0006	0.0006	-0.0009	-0.0011	-0.0011	-0.0011
	(0.84)	(0.65)	(0.81)	(0.81)	(-1.00)	(-1.45)	(-1.56)	(-1.41)
Human Development Index	0.0160	0.1322	0.1690	0.1373	-1.1326**	-1.5861***	-1.7807***	-1.4928***
	(0.06)	(0.46)	(0.54)	(0.43)	(-2.67)	(-4.04)	(-4.75)	(-3.96)
HDI × Skill Intensity	0.0056	0.0052	0.0077	0.0095	0.0717***	0.0838***	0.0801***	0.0776***
	(0.48)	(0.44)	(0.52)	(0.61)	(3.10)	(4.23)	(4.25)	(4.08)
R × Liquidity	-0.1315	0.0046	0.0116**	0.0179	0.4098**	0.0071	0.0068	0.0390*
	(-0.81)	(0.80)	(2.70)	(0.93)	(2.33)	(1.26)	(1.21)	(1.89)
Inflation	-0.0019***	-0.0021***	-0.0022***	-0.0021***	-0.0002	0.0008	0.0011	0.0011
	(-5.29)	(-4.16)	(-3.14)	(-3.11)	(-0.49)	(1.27)	(1.12)	(1.13)
Inflation × ExtDep	0.0013*	0.0020*	0.0027*	0.0025*	0.0009	0.0004	0.0000	-0.0002
	(1.75)	(1.99)	(1.94)	(1.91)	(1.00)	(0.31)	(0.03)	(-0.11)
Constant	0.0672	0.0339	-0.0525	-0.0597	0.4037*	0.5633**	0.8003***	0.6537***
	(0.61)	(0.25)	(-0.34)	(-0.40)	(1.86)	(2.48)	(3.80)	(3.15)
Fixed Effects								
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28
N	7424	6703	6305	6278	7703	7114	6711	6684
Adj. R^2	0.653	0.650	0.659	0.659	0.058	0.059	0.062	0.064
Using Selection on Observables to Assess the Bias from Unobservables								
$\hat{\emptyset}_2^f/(\hat{\emptyset}_2^r - \hat{\emptyset}_2^f)$			7.00		-4.17		-3.80	-3.62

Panel II: Crisis (2008-2010)

	Investment rate				Establishment growth			
	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Crisis (2008-2010)							
Share (-1)	0.0160	0.0138	0.0139	0.0151	-0.0252	-0.0279	-0.0272	-0.0274
	(0.34)	(0.28)	(0.29)	(0.31)	(-0.24)	(-0.26)	(-0.26)	(-0.26)
R	-0.1007*	-0.0040**	-0.0024	-0.0097*	0.4950***	0.0165***	0.0077	0.0502***
	(-1.75)	(-2.13)	(-1.31)	(-1.83)	(2.87)	(3.63)	(1.53)	(3.58)
R × ExtDep	0.1195**	0.0044***	0.0035**	0.0116**	0.3701***	0.0051**	0.0074**	0.0225***
	(2.76)	(2.82)	(2.33)	(2.71)	(4.10)	(2.10)	(2.70)	(3.03)
FinDev	0.0001*	0.0001	0.0001	0.0001	-0.0004	-0.0010**	-0.0005	-0.0009*
	(1.92)	(1.54)	(0.98)	(1.28)	(-0.87)	(-2.28)	(-0.97)	(-1.87)
FinDev × ExtDep	-0.0000	-0.0000	-0.0000	-0.0000	-0.0001	-0.0003**	-0.0003**	-0.0002*
	(-0.23)	(-0.38)	(-0.53)	(-0.29)	(-1.29)	(-2.21)	(-2.13)	(-1.91)
Bank Stability	-0.0004	-0.0003	-0.0004	-0.0003	0.0201***	0.0197***	0.0207***	0.0194***
	(-0.63)	(-0.49)	(-0.67)	(-0.55)	(6.28)	(5.95)	(6.29)	(5.91)
Stability × ExtDep	-0.0008	-0.0010*	-0.0008	-0.0009*	0.0004	0.0010	0.0009	0.0007
	(-1.55)	(-1.72)	(-1.53)	(-1.73)	(0.27)	(0.70)	(0.60)	(0.48)
Bank Competition	-0.0350	-0.0261	-0.0267	-0.0322	1.5324***	1.3617***	1.4642***	1.4741***
	(-0.53)	(-0.37)	(-0.40)	(-0.49)	(4.17)	(3.92)	(4.02)	(4.10)
Competition × ExtDep	-0.0978	-0.1256*	-0.1072*	-0.1057*	-0.1269	-0.1991	-0.1404	-0.1626
	(-1.60)	(-1.90)	(-1.74)	(-1.72)	(-0.51)	(-0.84)	(-0.57)	(-0.67)
Property Right	0.0005	0.0005	0.0005	0.0005	0.0018	0.0011	0.0016	0.0017
	(0.92)	(0.98)	(0.84)	(0.91)	(0.89)	(0.52)	(0.76)	(0.84)
Right × Intangibility	0.0006	0.0005	0.0006	0.0006	-0.0000	0.0000	-0.0000	-0.0001
	(0.87)	(0.79)	(0.83)	(0.82)	(-0.01)	(0.02)	(-0.01)	(-0.03)
Human Development Index	0.5719	0.6235	0.5492	0.5796	3.1585**	1.5203	2.5926*	2.2145
	(1.18)	(1.34)	(1.16)	(1.23)	(2.10)	(1.00)	(1.75)	(1.52)
HDI × Skill Intensity	-0.0147	-0.0143	-0.0148	-0.0143	-0.0554*	-0.0646*	-0.0608*	-0.0592*
	(-1.20)	(-1.16)	(-1.20)	(-1.16)	(-1.75)	(-2.02)	(-1.92)	(-1.85)
R × Liquidity	0.4245	0.0152	0.0136	0.0415	-0.4252	-0.0092	-0.0278	-0.0483
	(1.61)	(1.58)	(1.61)	(1.67)	(-0.45)	(-0.38)	(-1.17)	(-0.66)
Inflation	-0.0002	-0.0002	-0.0001	-0.0002	-0.0045	-0.0050	-0.0050	-0.0050
	(-0.17)	(-0.15)	(-0.11)	(-0.16)	(-1.40)	(-1.52)	(-1.52)	(-1.52)
Inflation × ExtDep	0.0007	0.0006	0.0007	0.0007	-0.0022	-0.0019	-0.0017	-0.0019
	(0.57)	(0.47)	(0.63)	(0.55)	(-0.57)	(-0.51)	(-0.45)	(-0.52)
Constant	-0.1848	-0.2319	-0.1938	-0.2303	-2.1736*	-0.6842	-1.3154	-0.9671
	(-0.56)	(-0.74)	(-0.61)	(-0.74)	(-1.84)	(-0.61)	(-1.19)	(-0.89)
Fixed Effects								
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28
N	2105	2105	2105	2105	2496	2496	2496	2496
Adj. R^2	0.662	0.664	0.662	0.664	0.139	0.136	0.129	0.136
Using Selection on Observables to Assess the Bias from Unobservables								
$\hat{\emptyset}_2^f/(\hat{\emptyset}_2^r - \hat{\emptyset}_2^f)$	-15.52	-11.00	-11.67	-11.60	9.23	5.10	4.63	6.43

Table 5A: Robustness to an alternative econometric model

The table presents the results from the regression
$y_{i,c,Crisis} = \vartheta + \emptyset_1 . Share_{i,c,Pre} + \emptyset_2 . \boldsymbol{R_{c,Pre}} \times \boldsymbol{ExtDep_i} + \emptyset_3 . FinDev_{c,Pre} \times ExtDep_i + \varepsilon_{i,c,Crisis}$.

$y_{i,c,Crisis}$ is the average ratio of gross fixed capital formation to output (investment rate) or growth in number of establishments of sector i in country c during the crisis period 2008-10. $Share$ is the average share of value added of industry i to total value added of all industries in country c during the pre-crisis period (2000-2007, 2005-07 or 2006-07). R is an indicator for average bank liquidity or capital ratio (*NSFR*, $Capital^{Total}$, $Capital^{Tier1}$) in country c during the pre-crisis period. $FinDev$ is an indicator of average financial development (i.e. sum of domestic credit to private sector and market capitalization as % of GDP) in country c during the pre-crisis period. $ExtDep$ is external financial dependence of each industry. All specifications contain a full set of sector and country fixed effects (ϑ). The statistical inferences are based on robust standard errors (associated t-values reported in parentheses) clustered at the industry level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Our sample includes 28 industries with three-digit ISIC, Rev.2 for 50 countries. Sample size varies across regression specifications because not all variables are available for all industries, all countries or all years.

	Investment rate				Establishment growth			
	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All	NSFR	Capital^{Total}	Capital^{Tier1}	PCA_All
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	I: Pre-crisis (average value 2000-2007)							
Share $_{Pre}$	-0.0367	-0.0362	-0.0386	-0.0376	-0.1571*	-0.1556*	-0.1555*	-0.1539*
	(-1.05)	(-0.98)	(-1.08)	(-1.05)	(-1.88)	(-1.88)	(-1.87)	(-1.86)
R $_{pre}$ × ExtDep	0.0843**	0.0040***	0.0033**	0.0117**	0.1457**	0.0020	0.0025	0.0098
	(2.56)	(3.03)	(2.25)	(2.68)	(2.41)	(0.65)	(0.92)	(1.32)
FinDev $_{Pre}$ × ExtDep	-0.0000	0.0000	-0.0000	0.0000	-0.0002	-0.0002*	-0.0002**	-0.0002
	(-0.28)	(0.30)	(-0.01)	(0.39)	(-1.56)	(-1.89)	(-2.07)	(-1.68)
Constant	0.0752***	0.0820***	0.0884***	0.0903***	0.1461**	0.1709**	0.1725***	0.1736**
	(4.46)	(5.26)	(5.90)	(5.98)	(2.32)	(2.72)	(2.77)	(2.74)
N	1018	990	990	990	1154	1154	1154	1154
Adj. R^2	0.720	0.723	0.722	0.723	0.251	0.249	0.249	0.250
	II: Pre-crisis (average value 2005-2007)							
Share $_{Pre}$	-0.0239	-0.0216	-0.0232	-0.0231	-0.1917*	-0.1309	-0.1313	-0.1305
	(-0.67)	(-0.50)	(-0.55)	(-0.55)	(-2.00)	(-1.49)	(-1.49)	(-1.48)
R $_{pre}$ × ExtDep	0.0769*	0.0035**	0.0025**	0.0081**	0.2696**	0.0054**	0.0054*	0.0171**
	(1.78)	(2.63)	(2.09)	(2.39)	(2.63)	(2.14)	(1.94)	(2.45)
FinDev $_{Pre}$ × ExtDep	-0.0000	-0.0000	-0.0000	-0.0000	-0.0001	-0.0001	-0.0001	-0.0001
	(-0.79)	(-0.37)	(-0.49)	(-0.31)	(-1.04)	(-1.44)	(-1.25)	(-1.07)
Constant	0.0789***	0.0831***	0.0865***	0.0900***	0.1426**	0.1632**	0.1659**	0.1732**
	(4.87)	(5.27)	(5.59)	(5.81)	(2.28)	(2.59)	(2.64)	(2.69)
N	981	960	960	960	1131	1110	1110	1110
Adj. R^2	0.727	0.729	0.728	0.729	0.283	0.277	0.276	0.278
	III: Pre-crisis (average value 2006-2007)							
Share $_{Pre}$	-0.0261	-0.0260	-0.0277	-0.0273	-0.1874*	-0.1321	-0.1326	-0.1316
	(-0.74)	(-0.61)	(-0.66)	(-0.65)	(-1.87)	(-1.39)	(-1.39)	(-1.38)
R $_{pre}$ × ExtDep	0.0877**	0.0028**	0.0021*	0.0073**	0.3018**	0.0052*	0.0057*	0.0181**
	(2.07)	(2.22)	(1.81)	(2.19)	(2.41)	(1.95)	(1.89)	(2.23)
FinDev $_{Pre}$ × ExtDep	-0.0000	-0.0000	-0.0000	-0.0000	-0.0001	-0.0001	-0.0001	-0.0001
	(-0.63)	(-0.55)	(-0.62)	(-0.36)	(-0.68)	(-1.36)	(-1.07)	(-0.88)
Constant	0.0783***	0.0847***	0.0879***	0.0907***	0.1397**	0.1633**	0.1659**	0.1737**
	(4.72)	(5.39)	(5.70)	(5.89)	(2.13)	(2.50)	(2.56)	(2.64)
N	970	949	949	949	1117	1096	1096	1096
Adj. R^2	0.728	0.729	0.728	0.728	0.285	0.278	0.278	0.279
Fixed Effects								
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50
# Industries	28	28	28	28	28	28	28	28

Table 5B: Robustness to IV approach

The table presents the results from the regression
$y_{i,c,t} = \vartheta + \emptyset_1.Share_{i,c,t-1} + \emptyset_2.R_{c,t} + \emptyset_3.\boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \emptyset_4.FinDev_{c,t} + \emptyset_5.FinDev_{c,t} \times ExtDep_i + \varepsilon_{i,c,t}$.

All variables are analogous to the Eq. (1), except that regressions are estimated using 2SLS. We instrument R, $FinDev$, $R \times ExtDep$ and $FinDev \times ExtDep$ using proxies for information sharing, legal rights, legal origins, and rule of law and their interactions with $ExtDep$ as instrumental variables. Note that the sample period now starts from 2005 because data for information sharing not available for years before 2005. For detailed definition of variables, see Table A2.

	Investment rate			Establishment growth		
	NSFR	Capital^{Total}	Capital^{Tier1}	NSFR	Capital^{Total}	Capital^{Tier1}
	[1]	[2]	[3]	[4]	[5]	[6]
	Whole sample (2005-2010)					
Share (-1)	-0.0233	-0.0218	-0.0224	-0.1098**	-0.1117**	-0.1140**
	(-0.72)	(-0.61)	(-0.62)	(-2.34)	(-1.99)	(-2.00)
R	0.1209	-0.0005	-0.0027	0.6010**	-0.0006	-0.0062
	(1.50)	(-0.16)	(-0.67)	(1.98)	(-0.09)	(-0.66)
R × ExtDep	0.0257	0.0087**	0.0068*	0.1945*	0.0126***	0.0127***
	(0.22)	(2.11)	(1.70)	(1.73)	(4.62)	(4.09)
FinDev	-0.0014***	-0.0007	-0.0009**	0.0003	0.0002	-0.0005
	(-3.14)	(-1.19)	(-2.11)	(0.37)	(0.26)	(-0.57)
FinDev × ExtDep	-0.0001**	0.0000	-0.0000	-0.0001	-0.0000	-0.0001
	(-2.46)	(0.09)	(-0.80)	(-1.00)	(-0.53)	(-0.65)
N	4503	4412	4388	5053	4962	4938
Hansen J - (p-value)	0.11	0.10	0.10	0.19	0.34	0.31
KP-LM χ2 - (p-value)	0.00	0.00	0.00	0.00	0.00	0.00
1**st **Stage F test						
R	555***	239***	601***	248***	551***	1310***
R × ExtDep	2322***	1051***	890***	3144***	1430***	1812***
	Pre-crisis (2005-2007)					
Share (-1)	-0.0545	-0.0597	-0.0624*	-0.1588**	-0.1417***	-0.1554***
	(-1.61)	(-1.58)	(-1.76)	(-2.55)	(-2.86)	(-3.24)
R	-0.5977***	-0.0015	0.0013	-2.6692***	0.0100*	0.0076
	(-4.38)	(-0.43)	(0.26)	(-5.42)	(1.95)	(0.89)
R × ExtDep	-0.1088	0.0041	0.0037	-0.2160	0.0091	0.0073
	(-0.56)	(0.78)	(0.66)	(-1.16)	(1.52)	(1.43)
FinDev	0.0003*	-0.0006***	-0.0006***	0.0009	-0.0035***	-0.0035***
	(1.69)	(-3.51)	(-3.97)	(1.33)	(-9.52)	(-9.37)
FinDev × ExtDep	-0.0002	0.0000	0.0000	-0.0003*	-0.0000	-0.0001
	(-1.23)	(0.20)	(0.10)	(-1.66)	(-0.16)	(-0.33)
N	2552	2461	2437	2714	2623	2599
Hansen J - (p-value)	0.04	0.01	0.01	0.07	0.02	0.02
KP-LM χ2 - (p-value)	0.00	0.00	0.00	0.00	0.00	0.00
1**st **Stage F test						
R	333***	483***	199***	941***	2360***	1147***
R × ExtDep	1657***	2639***	4015***	2335***	520***	3548***
	Crisis (2008-2010)					
Share (-1)	0.0177	0.0181	0.0240	-0.0923	-0.1008	-0.0903
	(0.40)	(0.40)	(0.51)	(-0.83)	(-0.93)	(-0.85)
R	-0.1835*	-0.0031	-0.0057	0.4001*	-0.0013	0.0346**
	(-1.81)	(-1.13)	(-1.08)	(1.89)	(-0.15)	(2.16)
R × ExtDep	0.2212***	0.0131***	0.0143***	0.5315***	0.0187***	0.0243***
	(2.78)	(3.59)	(4.03)	(3.50)	(4.24)	(4.92)
FinDev	0.0003	0.0003	0.0004	-0.0082***	-0.0083***	-0.0113***
	(1.07)	(0.95)	(1.09)	(-4.79)	(-4.61)	(-5.19)
FinDev × ExtDep	-0.0001	-0.0001**	-0.0001**	0.0001	-0.0001	-0.0001
	(-1.38)	(-2.13)	(-2.13)	(1.04)	(-0.45)	(-0.82)
N	1951	1951	1951	2339	2339	2339
Hansen J - (p-value)	0.16	0.15	0.12	0.27	0.17	0.28
KP-LM χ2 - (p-value)	0.00	0.00	0.00	0.00	0.00	0.00
1**st **Stage F test						
R	297***	437***	308***	1037***	729***	336***
R × ExtDep	4477***	3414***	900***	10376***	760***	1051***
Fixed Effects						
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√
# Countries	50	50	50	50	50	50
# Industries	28	28	28	28	28	28

Table 6: Bank liquidity and capital regulation and sectoral activity – Robustness I

The table presents the results from the regression
$y_{i,c,t} = \vartheta + \emptyset_1.Share_{i,c,t-1} + \emptyset_2.R_{c,t} + \emptyset_3.\boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \emptyset_4.FinDev_{c,t} + \emptyset_5.FinDev_{c,t} \times ExtDep_i + \varepsilon_{i,c,t}.$

$y_{i,c,t}$ is the average ratio of gross fixed capital formation to output (investment rate) or growth in number of establishments of sector i in country c in year t. $Share$ is the share of value added of industry i to total value added of all industries in country c in year $t-1$. R is an indicator for bank liquidity or capital ratio (*NSFR*, $Capital^{Total}$, $Capital^{Tier1}$) in country c in year t. $FinDev$ is an indicator of financial development (i.e. sum of domestic credit to private sector and market capitalization) in country c in year t. $ExtDep$ is external financial dependence of each industry. All specifications contain a full set of sector, country and year fixed effects (ϑ).

For detail definition of variables see Table A2. The statistical inferences are based on robust standard errors (associated t-values reported in parentheses) clustered at the industry level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Our sample includes 28 industries with three-digit ISIC, Rev.2 for 50 countries. Sample size varies across regression specifications because not all variables are available for all industries, all countries or all years.

Table 6A: Excluding "too big to fail" banks (130 banks)

	Investment rate			Establishment growth		
	NSFR	$Capital^{Total}$	$Capital^{Tier1}$	NSFR	$Capital^{Total}$	$Capital^{Tier1}$
	[1]	[2]	[3]	[4]	[5]	[6]
	Pre-crisis (2000-2007)					
Share (-1)	-0.0375	-0.0524	-0.0637*	-0.0325	-0.0578	-0.0555
	(-1.22)	(-1.65)	(-2.00)	(-0.80)	(-1.22)	(-1.28)
R	0.0059	-0.0008***	-0.0009**	0.0255	0.0015**	0.0028***
	(0.71)	(-2.93)	(-2.26)	(1.05)	(2.43)	(6.93)
R × ExtDep	0.0164	0.0011	0.0015*	0.0445	0.0006	0.0010
	(0.88)	(1.25)	(1.77)	(1.09)	(0.58)	(1.51)
FinDev	0.0002***	0.0002***	0.0002***	0.0000	-0.0000	0.0000
	(4.63)	(4.14)	(3.88)	(0.40)	(-0.11)	(0.33)
FinDev × ExtDep	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000
	(0.55)	(0.71)	(0.51)	(0.89)	(0.67)	(0.33)
Constant	0.1288***	0.1550***	0.1290***	0.0859**	0.1185***	0.2193*
	(6.25)	(6.79)	(7.57)	(2.13)	(4.06)	(1.89)
N	7628	6756	6156	7882	7142	6556
Adj. R^2	0.654	0.651	0.662	0.057	0.058	0.062
	Crisis (2008-2010)					
Share (-1)	0.0071	0.0073	0.0080	-0.0794	-0.0818	-0.0815
	(0.16)	(0.16)	(0.18)	(-0.69)	(-0.73)	(-0.73)
R	-0.0311	-0.0010	-0.0002	0.3628***	0.0125***	-0.0018
	(-0.98)	(-0.99)	(-0.17)	(4.69)	(4.33)	(-0.55)
R × ExtDep	0.0997**	0.0034**	0.0029**	0.3693***	0.0051**	0.0079***
	(2.32)	(2.50)	(2.12)	(3.90)	(2.20)	(2.85)
FinDev	0.0001*	0.0001	0.0001	0.0002	-0.0005	0.0002
	(1.97)	(1.29)	(1.07)	(0.40)	(-1.15)	(0.39)
FinDev × ExtDep	-0.0001	-0.0001**	-0.0001**	-0.0002	-0.0003**	-0.0003***
	(-1.60)	(-2.29)	(-2.38)	(-1.46)	(-2.70)	(-2.83)
Constant	0.1071***	0.1005***	0.0896***	-0.1984*	-0.0311	0.1920**
	(3.28)	(4.56)	(4.55)	(-1.75)	(-0.33)	(2.32)
N	2126	2126	2126	2517	2517	2517
Adj. R^2	0.662	0.663	0.662	0.122	0.117	0.110
Fixed Effects						
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√
# Countries	50	50	50	50	50	50
# Industries	28	28	28	28	28	28

Table 6B: Excluding banks that are less important for industrial loans (219 out of 765 banks reporting industrial loans)

	Investment rate			Establishment growth		
	NSFR	$Capital^{Total}$	$Capital^{Tier1}$	NSFR	$Capital^{Total}$	$Capital^{Tier1}$
	[1]	[2]	[3]	[4]	[5]	[6]
	Pre-crisis (2000-2007)					
Share (-1)	-0.0240	-0.0270	-0.0335	-0.0517	-0.0593	-0.0734
	(-0.65)	(-0.75)	(-0.91)	(-1.06)	(-1.21)	(-1.40)
R	-0.0150**	-0.0010***	-0.0009**	0.0440**	-0.0010	0.0025**
	(-2.51)	(-2.81)	(-2.62)	(2.19)	(-1.06)	(2.61)
R × ExtDep	0.0263*	0.0001	0.0004	0.0208	0.0022	0.0031**
	(2.00)	(0.21)	(0.53)	(0.55)	(1.15)	(2.16)
FinDev	0.0001**	0.0001***	0.0001**	-0.0001	-0.0002**	-0.0001
	(2.55)	(2.82)	(2.34)	(-1.06)	(-2.29)	(-1.66)
FinDev × ExtDep	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000
	(1.22)	(0.38)	(0.46)	(0.74)	(0.47)	(0.05)
Constant	0.1126***	0.1463***	0.1192***	0.1636	0.1218***	0.1861
	(6.99)	(6.23)	(6.94)	(1.34)	(2.85)	(1.59)
N	5104	4500	4056	5272	4789	4331
Adj. R^2	0.645	0.652	0.659	0.074	0.070	0.078
	Crisis (2008-2010)					
Share (-1)	0.0050	0.0113	0.0104	-0.0309	-0.0417	-0.0454
	(0.11)	(0.24)	(0.22)	(-0.33)	(-0.40)	(-0.44)
R	0.0282	-0.0025**	-0.0026*	0.1987**	0.0032	-0.0050*
	(0.90)	(-2.49)	(-1.91)	(2.21)	(1.13)	(-1.74)
R × ExtDep	0.1482***	0.0045**	0.0042**	0.3191***	0.0084**	0.0096**
	(4.15)	(2.48)	(2.29)	(4.06)	(2.68)	(2.73)
FinDev	0.0001	0.0002**	0.0002**	-0.0006	-0.0000	0.0002
	(0.86)	(2.37)	(2.21)	(-1.18)	(-0.04)	(0.41)
FinDev × ExtDep	-0.0001**	-0.0000	-0.0001	-0.0003**	-0.0002*	-0.0002*
	(-2.44)	(-1.19)	(-1.32)	(-2.24)	(-1.87)	(-1.83)
Constant	0.0570*	0.1213***	0.1131***	0.0185	0.1007	0.2166***
	(1.99)	(5.51)	(5.29)	(0.18)	(1.25)	(3.02)
N	1873	1925	1925	2261	2315	2315
Adj. R^2	0.672	0.667	0.666	0.130	0.110	0.107
Fixed Effects						
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√
# Countries	50	50	50	50	50	50
# Industries	28	28	28	28	28	28

Table 6C: Only banks that meet Basel III requirements

	Investment rate			Establishment growth		
	NSFR>=1	$Capital^{Total}$>= 10.5%	$Capital^{Tier1}$> =8.5%	NSFR>=1	$Capital^{Total}$>= 10.5%	$Capital^{Tier1}$> =8.5%
	[1]	[2]	[3]	[4]	[5]	[6]
	Pre-crisis (2000-2007)					
Share (-1)	-0.0512	-0.0523	-0.0650*	-0.0477	-0.0566	-0.0585
	(-1.55)	(-1.64)	(-2.02)	(-1.10)	(-1.22)	(-1.35)
R	0.0274***	-0.0003	-0.0008**	-0.0449*	0.0023***	0.0018***
	(3.27)	(-0.64)	(-2.12)	(-1.75)	(3.44)	(3.44)
R × ExtDep	-0.0164	0.0012	0.0011	-0.0136	0.0003	-0.0002
	(-0.87)	(1.17)	(1.44)	(-0.39)	(0.30)	(-0.32)
FinDev	0.0003***	0.0002***	0.0002***	-0.0001	-0.0000	-0.0000
	(5.28)	(4.21)	(4.42)	(-1.30)	(-0.55)	(-0.31)
FinDev × ExtDep	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.51)	(0.98)	(0.61)	(0.45)	(0.57)	(0.10)
Constant	0.1032***	0.1450***	0.1304***	0.2104***	0.1061***	0.2364*
	(4.68)	(6.17)	(7.47)	(3.95)	(3.57)	(2.03)
N	6551	6759	5982	6672	7140	6372
Adj. R^2	0.630	0.652	0.665	0.065	0.056	0.059
	Crisis (2008-2010)					
Share (-1)	0.0144	0.0082	0.0084	-0.0547	-0.0805	-0.0802
	(0.29)	(0.18)	(0.19)	(-0.45)	(-0.72)	(-0.72)
R	0.0147	-0.0015	-0.0011	0.7331***	0.0102***	-0.0012
	(0.52)	(-1.41)	(-1.15)	(6.52)	(3.32)	(-0.59)
R × ExtDep	0.0131	0.0041**	0.0036**	0.0925	0.0062**	0.0082**
	(0.35)	(2.43)	(2.05)	(1.55)	(2.23)	(2.10)
FinDev	0.0001*	0.0001	0.0001	-0.0000	-0.0004	0.0001
	(1.73)	(1.36)	(1.58)	(-0.00)	(-1.01)	(0.32)
FinDev × ExtDep	-0.0001**	-0.0001*	-0.0001*	-0.0002*	-0.0003**	-0.0003**
	(-2.29)	(-1.75)	(-2.03)	(-1.73)	(-2.36)	(-2.47)
Constant	0.0679*	0.1067***	0.0987***	-0.6734***	0.0023	0.1849**
	(1.80)	(4.75)	(5.31)	(-5.17)	(0.02)	(2.36)
N	1823	2126	2126	2203	2517	2517
Adj. R^2	0.668	0.664	0.662	0.128	0.116	0.110
Fixed Effects						
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√
# Countries	50	50	50	50	50	50
# Industries	28	28	28	28	28	28

Table 7: Bank liquidity and capital regulation and sectoral activity – Robustness II

The table presents the results from the regression
$y_{i,c,t} = \vartheta + \emptyset_1.Share_{i,c,t-1} + \emptyset_2.R_{c,t} + \emptyset_3.\boldsymbol{R_{c,t}} \times \boldsymbol{ExtDep_i} + \emptyset_4.FinDev_{c,t} + \emptyset_5.FinDev_{c,t} \times ExtDep_i + \varepsilon_{i,c,t}$.

$y_{i,c,t}$ is the ratio of gross fixed capital formation to output (investment rate) or growth in number of establishments of sector i in country c in year t. $Share$ is the share of value added of industry i to total value added of all industries in country c in year $t-1$. R is an indicator for bank liquidity or capital ratio ($NSFR$, $Capital^{Total}$, $Capital^{Tier1}$) in country c in year t. $FinDev$ is an indicator of financial development (i.e. sum of domestic credit to private sector and market capitalization as % of GDP) in country c in year t. $ExtDep$ is external financial dependence of each industry. All specifications contain a full set of sector, country and year fixed effects (ϑ).

For detail definition of variables see Table A2. The statistical inferences are based on robust standard errors (associated t-values reported in parentheses) clustered at the industry level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Our sample includes 28 industries with three-digit ISIC, Rev.2 for 50 countries. Sample size varies across regression specifications because not all variables are available for all industries, all countries or all years.

Table 7A: Market-based vs. bank-based economies

Panel I: Pre-crisis (2000-2007)

	Investment rate			Establishment growth		
	NSFR	$Capital^{Total}$	$Capital^{Tier1}$	NSFR	$Capital^{Total}$	$Capital^{Tier1}$
	[1]	[2]	[3]	[4]	[5]	[6]
	Market-based economies					
Share (-1)	-0.0025	-0.0191	-0.0231	-0.0639	-0.1196**	-0.1268**
	(-0.08)	(-0.52)	(-0.62)	(-1.43)	(-2.33)	(-2.55)
R	-0.0072	-0.0003	-0.0017***	0.0417	0.0122***	0.0040***
	(-0.54)	(-0.35)	(-2.88)	(1.59)	(9.32)	(5.04)
R × ExtDep	0.0155	0.0024	0.0021*	-0.0009	0.0017*	0.0023*
	(0.71)	(1.51)	(1.87)	(-0.02)	(1.96)	(1.93)
FinDev	0.0003***	0.0003***	0.0003***	-0.0004***	-0.0005***	-0.0005***
	(4.55)	(4.45)	(4.18)	(-4.39)	(-4.99)	(-4.62)
FinDev × ExtDep	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001
	(0.29)	(0.25)	(0.24)	(0.80)	(0.87)	(0.65)
Constant	-0.0081	-0.0043	0.0181	0.1014***	-0.0450*	0.0560**
	(-0.55)	(-0.20)	(1.03)	(2.82)	(-1.98)	(2.58)
N	3909	3299	3118	4105	3623	3439
Adj. R^2	0.589	0.593	0.599	0.085	0.111	0.098
	Bank-based economies					
Share (-1)	-0.0628	-0.0681	-0.0785*	0.0139	0.0161	0.0328
	(-1.45)	(-1.56)	(-1.77)	(0.22)	(0.25)	(0.54)
R	0.0190	-0.0006	0.0006	-0.1775***	-0.0017	0.0040***
	(1.54)	(-1.26)	(1.22)	(-3.83)	(-1.29)	(2.97)
R × ExtDep	0.0248	0.0008	0.0012	0.0775	-0.0001	-0.0002
	(0.94)	(0.83)	(1.05)	(1.16)	(-0.04)	(-0.18)
FinDev	0.0001	0.0001	0.0000	0.0000	0.0002	0.0001
	(1.11)	(1.32)	(0.57)	(0.22)	(1.47)	(1.11)
FinDev × ExtDep	0.0000	0.0001	0.0001	0.0000	-0.0000	-0.0000
	(0.80)	(0.99)	(1.07)	(0.35)	(-0.22)	(-0.51)
Constant	0.1089***	0.1458***	0.0962***	0.3990***	0.2103***	0.2609**
	(5.13)	(5.77)	(5.01)	(5.77)	(6.88)	(2.24)
N	3761	3545	3275	3818	3606	3360
Adj. R^2	0.701	0.696	0.715	0.088	0.078	0.084
Fixed Effects						
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√
# Countries	50	50	50	50	50	50
# Industries	28	28	28	28	28	28

Panel II: Crisis (2008-2010)

	Investment rate			Establishment growth		
	NSFR	$Capital^{Total}$	$Capital^{Tier1}$	NSFR	$Capital^{Total}$	$Capital^{Tier1}$
	[1]	[2]	[3]	[4]	[5]	[6]
	Market-based economies					
Share (-1)	-0.0339	-0.0360	-0.0345	-0.0329	-0.0278	-0.0275
	(-0.78)	(-0.83)	(-0.79)	(-0.34)	(-0.30)	(-0.29)
R	0.0681	0.0000	-0.0003	0.5068**	0.0420***	0.0491***
	(0.85)	(0.01)	(-0.08)	(2.75)	(5.84)	(6.03)
R × ExtDep	0.0209	0.0022	0.0019	0.4870*	0.0017	0.0000
	(0.23)	(1.31)	(1.16)	(1.71)	(0.43)	(0.00)
FinDev	-0.0000	-0.0000	0.0000	0.0010*	-0.0026***	-0.0026***
	(-0.11)	(-0.04)	(0.07)	(1.82)	(-3.80)	(-4.01)
FinDev × ExtDep	0.0002	0.0001	0.0001	-0.0004*	-0.0003	-0.0002
	(1.15)	(0.89)	(0.96)	(-1.71)	(-1.19)	(-1.01)
Constant	-0.0231	0.0375	0.0372	-0.8151***	-0.5488***	-0.5242***
	(-0.34)	(1.60)	(1.58)	(-3.84)	(-4.92)	(-4.70)
N	685	685	685	830	830	830
Adi. R^2	0.716	0.716	0.716	0.168	0.211	0.206
	Bank-based economies					
Share (-1)	0.0131	0.0156	0.0114	-0.1296	-0.1430	-0.1359
	(0.21)	(0.25)	(0.18)	(-0.78)	(-0.85)	(-0.83)
R	-0.0372	-0.0032	-0.0004	0.4205***	0.0095**	-0.0163***
	(-0.84)	(-1.68)	(-0.15)	(4.10)	(2.67)	(-3.79)
R × ExtDep	0.1137***	0.0047**	0.0035*	0.4854***	0.0106***	0.0183***
	(3.20)	(2.29)	(1.82)	(4.81)	(3.44)	(5.37)
FinDev	0.0001	0.0001	0.0001	-0.0019**	-0.0015*	-0.0016*
	(0.81)	(1.03)	(0.85)	(-2.32)	(-1.80)	(-1.90)
FinDev × ExtDep	-0.0001**	-0.0001**	-0.0001***	0.0001	-0.0001	-0.0001
	(-2.26)	(-2.50)	(-2.89)	(0.56)	(-1.29)	(-0.43)
Constant	0.1095**	0.1344***	0.0894***	-0.1921	0.0491	0.4067***
	(2.56)	(3.63)	(2.94)	(-1.51)	(0.44)	(4.18)
N	1441	1441	1441	1687	1687	1687
Adi. R^2	0.636	0.637	0.635	0.107	0.097	0.100
Fixed Effects						
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√
# Countries	50	50	50	50	50	50
# Industries	28	28	28	28	28	28

Table 7B: Advanced vs. emerging market economies

Panel I: Pre-crisis (2000-2007)

	Investment rate			Establishment growth		
	NSFR	Capital^{Total}	Capital^{Tier1}	NSFR	Capital^{Total}	Capital^{Tier1}
	[1]	[2]	[3]	[4]	[5]	[6]
	Advanced economies					
Share (-1)	0.0243	-0.0003	-0.0001	0.0023	-0.0476	-0.0511
	(0.55)	(-0.01)	(-0.00)	(0.04)	(-0.78)	(-0.81)
R	-0.0102	0.0002	-0.0001	-0.0487**	0.0021**	0.0028***
	(-1.39)	(0.79)	(-0.29)	(-2.36)	(2.07)	(3.75)
R × ExtDep	0.0017	0.0000	0.0003	0.0425	0.0040**	0.0024
	(0.25)	(0.06)	(0.45)	(1.56)	(2.50)	(1.49)
FinDev	-0.0000	-0.0000	-0.0000	0.0004***	0.0004***	0.0004***
	(-0.12)	(-0.20)	(-0.31)	(3.80)	(3.70)	(3.88)
FinDev × ExtDep	0.0001	0.0001	0.0001	-0.0001	-0.0001	-0.0001
	(0.99)	(0.93)	(0.85)	(-0.62)	(-0.86)	(-0.77)
Constant	0.0453***	0.0474***	0.0522***	0.0442	-0.0700**	-0.0687***
	(3.79)	(3.44)	(3.78)	(1.27)	(-2.61)	(-2.79)
N	4082	3642	3542	4324	3900	3796
Adj. R^2	0.252	0.253	0.260	0.070	0.080	0.081
	Emerging economies					
Share (-1)	-0.0753**	-0.0862**	-0.0919**	-0.0792	-0.0775	-0.0587
	(-2.09)	(-2.05)	(-2.39)	(-1.46)	(-1.23)	(-0.99)
R	0.0062	-0.0020***	-0.0022**	0.0616	0.0013	0.0023**
	(0.37)	(-4.48)	(-2.75)	(1.60)	(1.18)	(2.51)
R × ExtDep	0.0294	0.0018	0.0027*	0.0506	0.0003	0.0011
	(0.80)	(1.32)	(1.87)	(0.77)	(0.17)	(0.85)
FinDev	0.0008***	0.0008***	0.0009***	-0.0013***	-0.0015***	-0.0015***
	(6.10)	(6.74)	(6.73)	(-6.43)	(-6.58)	(-6.44)
FinDev × ExtDep	-0.0000	0.0001	0.0000	0.0002	0.0002	0.0002
	(-0.18)	(0.85)	(0.52)	(0.95)	(0.99)	(0.90)
Constant	0.1354***	0.1971***	0.1928***	0.0139	0.0929**	0.1738
	(5.67)	(6.70)	(7.26)	(0.26)	(2.56)	(1.43)
N	3588	3202	2851	3599	3329	3003
Adj. R^2	0.664	0.655	0.665	0.057	0.042	0.046
Fixed Effects						
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√
# Countries	50	50	50	50	50	50
# Industries	28	28	28	28	28	28

Panel II: Crisis (2008-2010)

	Investment rate			Establishment growth		
	NSFR	$Capital^{Total}$	$Capital^{Tier1}$	NSFR	$Capital^{Total}$	$Capital^{Tier1}$
	[1]	[2]	[3]	[4]	[5]	[6]
	Advanced economies					
Share (-1)	0.0264	0.0325	0.0340	-0.0036	0.0173	0.0164
	(0.56)	(0.69)	(0.72)	(-0.02)	(0.11)	(0.10)
R	-0.0209	0.0001	0.0001	0.3064	-0.0019	-0.0341***
	(-0.55)	(0.06)	(0.07)	(1.48)	(-0.33)	(-2.81)
R × ExtDep	0.0804	0.0014	0.0013	0.2045	-0.0002	-0.0002
	(1.15)	(0.85)	(0.74)	(1.24)	(-0.04)	(-0.05)
FinDev	0.0000	0.0000	0.0000	0.0003	0.0004	0.0011
	(0.63)	(0.55)	(0.55)	(0.66)	(0.61)	(1.67)
FinDev × ExtDep	0.0001**	0.0001**	0.0001**	-0.0001	-0.0001	-0.0001
	(2.59)	(2.15)	(2.42)	(-0.69)	(-0.57)	(-0.57)
Constant	0.0458	0.0330	0.0343	-0.3149	0.0100	0.3172**
	(1.59)	(1.52)	(1.51)	(-1.53)	(0.12)	(2.62)
N	1022	1022	1022	1101	1101	1101
Adj. R^2	0.277	0.276	0.275	0.125	0.119	0.134
	Emerging economies					
Share (-1)	0.0175	0.0156	0.0152	-0.0855	-0.1096	-0.0975
	(0.30)	(0.27)	(0.26)	(-0.66)	(-0.83)	(-0.75)
R	-0.0200	-0.0014	0.0006	0.4042***	0.0181***	0.0072**
	(-0.39)	(-0.79)	(0.26)	(3.70)	(5.78)	(2.24)
R × ExtDep	0.1106**	0.0051**	0.0038*	0.4987***	0.0098**	0.0150***
	(2.15)	(2.11)	(1.79)	(4.69)	(2.44)	(3.32)
FinDev	0.0002	0.0002	0.0001	0.0001	-0.0011	-0.0001
	(1.62)	(0.90)	(0.37)	(0.11)	(-1.68)	(-0.18)
FinDev × ExtDep	-0.0004***	-0.0004***	-0.0004***	-0.0002	-0.0002	-0.0002
	(-3.90)	(-3.91)	(-4.01)	(-0.39)	(-0.42)	(-0.39)
Constant	0.0825*	0.0903***	0.0702**	-0.2839**	-0.1482	0.0559
	(1.83)	(2.94)	(2.65)	(-2.10)	(-1.37)	(0.61)
N	1104	1104	1104	1416	1416	1416
Adj. R^2	0.661	0.662	0.661	0.101	0.102	0.094
Fixed Effects						
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (industry)	√	√	√	√	√	√
# Countries	50	50	50	50	50	50
# Industries	28	28	28	28	28	28

Appendix

Table A1: Items and weights used for calculation of NSFR.

Category	Item	Weight
Assets Side (Required Stable Funding)		
Earning assets	Total earning assets	
Loans	Total loans	100%
Customer loans	Total customer loans	
	Mortgages	
	Other mortgage loans	
	Other consumer / retail loans	
	Corporate & commercial loans	
	Other loans	
Other	Other earning assets	35%
	Loans and advances to banks	
	Derivatives	
	Other securities	
	Trading securities	
	Investment securities	
	Remaining earning assets	
Non-earning assets	Total non-earning assets	
Fixed	Fixed assets	100%
Other	Other non-earning assets	
	Cash and due from banks	0%
	Goodwill	100%
	Other intangibles	100%
	Other assets	100%
Liability & Equity Side (Available Stable Funding)		
Deposits	Deposits and short-term funding	
Customer deposits	Customer deposits	
	Customer deposit-current	85%
	Customer deposit-savings	70%
	Customer deposit-term	70%
Other	Deposits from banks	0%
	Other deposits and short-term borrowings	0%
Other	Other interest-bearing liabilities	
	Derivatives	0%
	Trading liabilities	0%
	Long-term funding	100%
	Total long-term funding	100%
	Senior debt	
	Subordinated borrowing	
	Other funding	
	Other (non-interest bearing liabilities)	100%
Reserves	Loan loss reserves	100%
	Other reserves	100%
Equity	Total equity	100%
	Preferred shares and hybrid capital	100%

Table A2: Variable definition and sources.

Variable	Definition and source
Sectoral activity [y]	
Investment rate	The ratio of gross fixed capital formation to output in a particular sector in each country. Nominal output deflated using producer price index of finished goods index (taken from Economic Research, Federal Reserve Bank of St. Louis). Source: UNIDO database, and own calculation.
Establishment growth	Simple growth rate of number of establishments in a particular sector in each country. Source: UNIDO database, and own calculation.
Other industry characteristics	
Share	The value added of each sector as a share of the total value added of all sectors in an economy. Source: UNIDO database, and own calculation.
ExtDep	External financial dependence of U.S. firms by 3-digit ISIC codes. This is an industry-level median of the ratio of capital expenditures minus cash flow over capital expenditures. Cash flow is defined as the sum of funds from operations, decreases in inventories, decreases in receivables, and increases in payables. Capital expenditures include net acquisitions of fixed assets. Source: Rajan and Zingales (1998).
Tang	Tangibility of each industry as measured by industry-level median of the ratio of net property, plant, and equipment relative to the total assets. Source: Kroszner et al. (2007).
GO	Growth opportunities as measured by industry-level median growth in real sales for U.S firms. Source: Ciccone and Papaioonnou (2006).
Liquidity and capital levels [R]	
NSFR	NSFR is the long-term liquidity requirement defined under Basel III. It is computed in line with the Basel III proposal and weights from Vazquez and Federico (2015) and Kapan and Minoiu (2013), as shown in Table A1. Source: Bankscope and own calculation.
Capital ^{Total}	Regulatory total capital ratio as reported in Bankscope. It is an indicator of bank total quality and quantity capital. Source: Bankscope, and own calculation.
Capital ^{Tier1}	Regulatory Tier 1 capital ratio as reported in Bankscope. It is an indicator of bank capital quality rather than quantity. Source: Bankscope, and own calculation.
PCA_All	An overall measure of bank liquidity/capital level, which measured as the first component from a principal component analysis that uses the above three bank liquidity and capital ratios.
Control	
FinDev	Sum of the ratio of domestic credit to private sector and market capitalization of listed companies, as % of GDP, which refers to the relative size of a country's financial sector (banking and stock exchanges). Source: World Bank-WDI, and own calculation.
Other controls	
Bank Stability	A measure of a bank soundness calculated as return on assets plus capital to asset ratio divided by volatility of return on assets. Source: World Bank - The Global Financial Development Database.
Bank Competition	A measure of market power in the banking sector. It compares output pricing and marginal costs (that is, markup). An increase in the Lerner index indicates a deterioration of the competitive conduct of financial intermediaries. Source: World Bank - The Global Financial Development Database.
Property Right	It measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. It ranges from 0 to 100. A higher score indicates better protection of property rights and signify greater protection of private property rights. Source: Heritage Foundation Database.
Intangibility	It is a proxy for industry-specific intangible intensity. Source: Kroszner at al. (2007).
Human Development Index	It is an index that measures key dimensions of human development: life expectancy, education, and standard of living. Source: UNDP.
Skill Intensity	It is a proxy capturing human capital intensity of each industry. Source: Ciccone and Papaioannou, (2009).
Liquidity	A proxy for an industry's need for working capital financing (that is short-term financing). Source: Kroszner et al. (2007).
Inflation	The annual change in the consumer price index. Source: World Bank - World Development Indicators.
Instrumental variables	
Credit Bureau (public)	The number of individuals and firms listed in a public credit registry with information on their borrowing history from the past 5 years as a % of the total population. Source: World Bank - "Doing Business" project.
Credit Bureau (private)	The number of individuals and firms listed by a private credit bureau with information on their borrowing history from the past 5 years as a % of the total population. Source: World Bank - "Doing Business" project.
Depth of credit information	It measures rules affecting the scope, accessibility, and quality of credit information available through public or private credit registries. Source: World Bank - "Doing Business" project.
Strength of legal rights	It measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. Source: World Bank - "Doing Business" project.
Legal Origin	An indicator of a country's legal system. We classify whether a country's legal system is based on British, French, German or Scandinavian law. Source: Source: World Bank - "Doing Business" project.
Rule of Law	Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Source: World Bank - Worldwide Governance Indicator.

Table A3: Presence of stable banks versus risky banks.

This table reports percentage of our sample of banks met minimum liquidity/capital requirements under Basel III (stable banks) and those did not (risky banks) averaged for both the pre and during the crisis periods. A bank is called "stable" if its $NSFR \geq 1$, $Capital^{Total} \geq 10.5\%$ or $Capital^{Tier1} \geq 8.5\%$ when we consider liquidity, total regulatory capital and tier 1 capital ratios respectively. A bank is called "risky" otherwise.

			Pre-crisis (2000-2007)	Crisis (2008-2010)
Stable banks (in terms of	NSFR >=1	[1]	41.39%	27.17%
	$Capital^{Total}$ >=10.5%	[2]	79.47%	87.99%
	$Capital^{Tier1}$ >=8.5%	[3]	68.28%	81.88%
Risky banks (in terms of	NSFR <1	[1']	58.61%	72.83%
	$Capital^{Total}$ <10.5%	[2']	20.53%	12.01%
	$Capital^{Tier1}$ <8.5%	[3']	31.72%	18.12%

Table A4: Test of reverse causality

The table presents the results from the regression
$R_{c,t} = \beta + \sum_{t=1}^{n} \delta_n . R_{c,t-n} + \sum_{t=1}^{n} \mu_n . y_{c,t-n} + \varepsilon_{c,t}$.
The dependent variable is average bank liquidity/capital ratio in country c in year t. The key independent variable is (weighted) average sectoral activity: investment rate, weighted investment rate, growth in number of establishment rate, or weighted growth in number of establishment rate. Averages are taken from 28 industries with three-digit ISIC, Rev.2 and weights are based on external financial dependence of each industry ($ExtDep$). We also include lagged of the dependent variable as a control variable, following the methodology of Granger (1969). All specifications contain a full set of country and year fixed effects (β).
For detail definition of variables see Table A2. The statistical inferences are based on robust standard errors (associated t-values reported in parentheses) clustered at the country level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Our sample includes 50 countries. Sample size varies across regression specifications because not all variables are available for all countries or all years.

	NSFR				$Capital^{Total}$				$Capital^{Tier1}$			
	One Year	Two Years	Three Years	Four Years	One Year	Two Years	Three Years	Four Years	One Year	Two Years	Three Years	Four Years
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
	y = Investment rate											
$y_{(t-n)}$: Sectoral activity	-0.0089	-0.0559***	-0.0395	-0.0592*	-0.2740	1.6045	0.7189	0.3019	-0.1691	0.1530	-0.3242	0.3426
	(-0.46)	(-2.89)	(-1.51)	(-1.82)	(-0.50)	(1.07)	(0.73)	(0.53)	(-0.22)	(0.14)	(-0.33)	(0.45)
$R_{(t-n)}$	0.4386***	0.1543**	-0.0030	-0.1019	0.3572***	0.0419	-0.0655	-0.1559**	0.3245***	0.0293	-0.1532***	-0.2260***
	(2.93)	(2.39)	(-0.04)	(-1.39)	(6.07)	(0.73)	(-1.16)	(-2.26)	(3.41)	(0.49)	(-4.03)	(-3.00)
N	427	423	417	415	385	376	363	353	358	341	325	310
Adj. R^2	0.670	0.662	0.611	0.592	0.720	0.633	0.643	0.617	0.645	0.559	0.577	0.561
	y = Weighted investment rate											
$y_{(t-n)}$: Sectoral activity	-0.1299	-0.2617**	-0.2895*	-0.3537*	-1.4572	5.5687	0.0663	-0.0261	-0.1436	-1.7835	-5.2817	-1.9666
	(-1.61)	(-2.54)	(-1.69)	(-1.73)	(-0.56)	(0.74)	(0.01)	(-0.01)	(-0.03)	(-0.22)	(-0.71)	(-0.29)
$R_{(t-n)}$	0.4402***	0.1605**	0.0113	-0.0803	0.3577***	0.0326	-0.0676	-0.1549**	0.3250***	0.0313	-0.1411***	-0.2143***
	(2.95)	(2.50)	(0.14)	(-1.05)	(6.16)	(0.55)	(-1.16)	(-2.32)	(3.41)	(0.51)	(-3.59)	(-2.85)
N	427	423	417	415	385	376	363	353	358	341	325	310
Adj. R^2	0.672	0.664	0.620	0.604	0.720	0.630	0.641	0.617	0.645	0.560	0.582	0.561
	y = Establishment growth											
$y_{(t-n)}$: Sectoral activity	-0.0091	-0.0079	-0.0473	-0.0193	-0.5104	-0.3125	0.5543	0.6923	-0.5598	-0.8993	-0.5407	2.7706
	(-0.25)	(-0.22)	(-1.62)	(-0.60)	(-0.55)	(-0.35)	(0.78)	(0.74)	(-0.76)	(-1.12)	(-0.53)	(1.37)
$R_{(t-n)}$	0.4575***	0.2010**	-0.0241	-0.1405**	0.4006***	0.0799	-0.0505	-0.1494*	0.3441***	0.0689	-0.1500***	-0.2376***
	(2.89)	(2.39)	(-0.29)	(-2.05)	(6.55)	(1.35)	(-0.77)	(-1.88)	(3.29)	(1.12)	(-3.29)	(-3.55)
N	436	430	422	416	397	385	370	358	375	355	338	322
Adj. R^2	0.651	0.567	0.532	0.551	0.711	0.578	0.583	0.596	0.634	0.557	0.565	0.578
	y = Weighted establishment growth											
$y_{(t-n)}$: Sectoral activity	0.0102	-0.0214	-0.1659	-0.0721	-0.7190	-0.2563	0.1113	-0.2795	-2.9640	-3.2369	-3.8372	10.5561
	(0.07)	(-0.16)	(-1.39)	(-0.60)	(-0.18)	(-0.08)	(0.04)	(-0.09)	(-1.14)	(-0.94)	(-0.95)	(1.29)
$R_{(t-n)}$	0.4571***	0.2010**	-0.0242	-0.1402**	0.3998***	0.0790	-0.0486	-0.1467*	0.3461***	0.0705	-0.1448***	-0.2437***
	(2.88)	(2.39)	(-0.29)	(-2.04)	(6.47)	(1.32)	(-0.75)	(-1.86)	(3.33)	(1.12)	(-3.13)	(-3.85)
N	436	430	422	416	397	385	370	358	375	355	338	322
Adj. R^2	0.651	0.567	0.532	0.551	0.711	0.578	0.582	0.595	0.635	0.557	0.566	0.579
Fixed Effects												
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster (country)	√	√	√	√	√	√	√	√	√	√	√	√
# Countries	50	50	50	50	50	50	50	50	50	50	50	50

Figure 1. Best and worst countries with regards to sectoral activity over the period 2000–10.

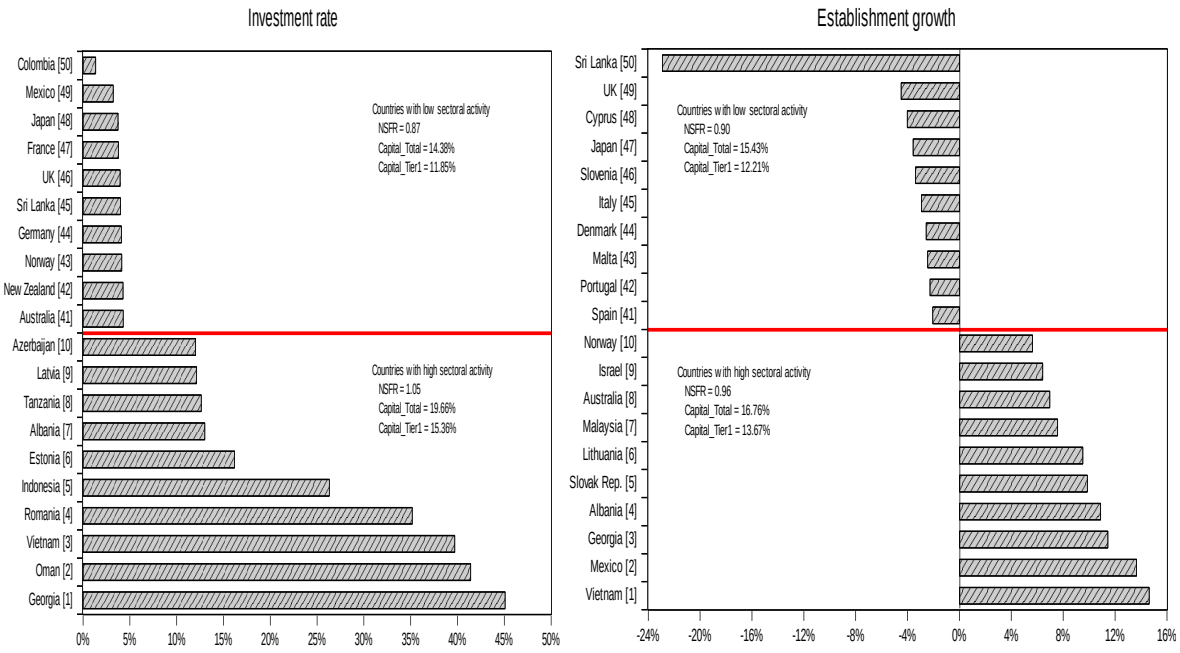
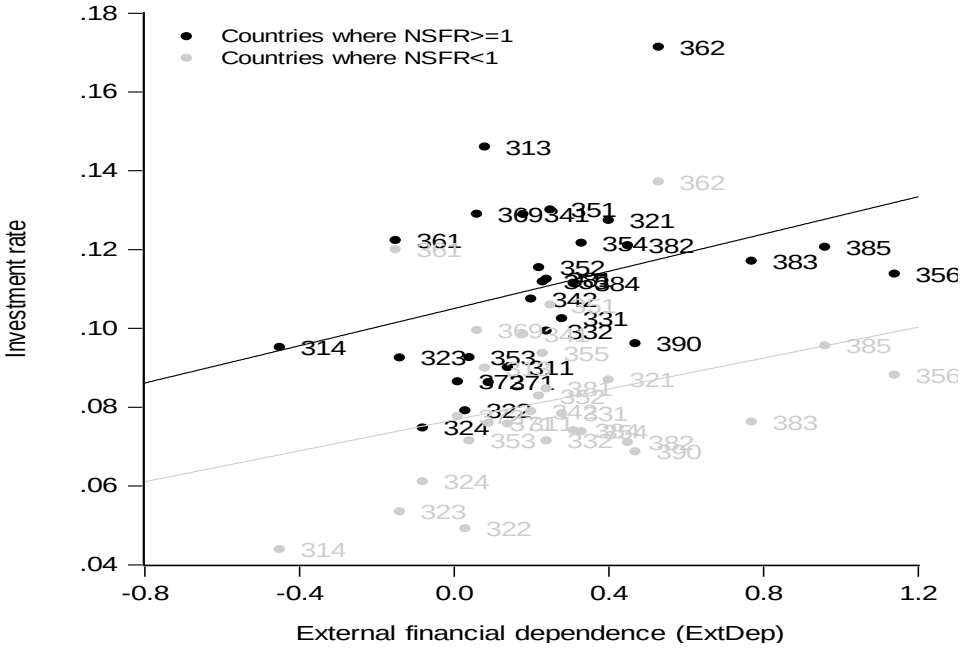


Figure 2. Average investment rate for 28 industries and external dependence in countries with high NSFR (>=1) and countries with low NSFR (<1). The figure also shows the best linear fit of the relation between average investment rate and external dependence in countries with high and low stable banking (measured by the NSFR). The 3-digit number accompanying each mark corresponds to the industry's 3-digit ISIC Rev. 2 code.

(a) Pre-crisis period 2000-2007



(b) Crisis period 2008-2010