

**What Drives Financial  
Development?  
A Meta-Regression Analysis**

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# What Drives Financial Development? A Meta-Regression Analysis

## Abstract

This paper offers a meta-regression analysis of the literature on the drivers of financial development. Our results based on 1900 estimates suggest that institutional quality is positively correlated to both private sector credit and stock market capitalization (both as share of GDP). Domestic financial openness has a positive effect on both proxies for financial development, while trade openness seems only important for stock market capitalization. Inflation has an adverse effect on financial development, which is larger for stock market capitalization. Finally, we conclude that the literature has not yet robustly established that remittances and trust matter for financial development.

JEL-Codes: G210, N200, O160, O430, P480.

Keywords: financial development, meta-regression analysis, law and finance, institutional quality, trade openness, financial openness, remittances, trust.

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## 1. Introduction

There is a large literature showing that finance promotes economic development (at least up to a point). A well-developed financial system channels savings into value-creating investments, monitors borrowers to increase efficiency, facilitates to pool, share and diversify risk, and enables trade. King and Levine (1993a, b) and Rajan and Zingales (1998) were among the first to argue that financial development is related to economic development. Most studies in this line of research report evidence that financial development stimulates economic growth (Levine *et al.*, 2000; Levine, 2005; Jerzmanowski, 2017), although some reach more ambivalent conclusions (e.g. Rioja and Valev, 2004 and Gries *et al.*, 2009).<sup>1</sup>

There is also a large literature on the relationship between financial development and income inequality.<sup>2</sup> Financial development can provide poor households with greater access to resources to meet their financial needs and may thereby lower income inequality (Dabla-Norris *et al.*, 2015). Theory, however, suggests that financial development could also benefit the rich, notably so in the early stages of development (Greenwood and Jovanovic, 1990). Inequality can increase when those with higher incomes and assets have a disproportionately larger share of access to finance, serving to further increase the skill premium, and potentially the return to capital (Claessens and Perotti, 2007). Indeed, several recent studies have found that financial development, generally measured as the ratio of private sector credit to GDP, increases income inequality (see de Haan and Sturm, 2017 for an extensive review of the literature).

In view of the importance of financial development for economic growth and income inequality, it is not surprising that the drivers of financial development have been extensively researched. Determinants of financial development that have been analyzed include trade and financial openness, legal rules and the quality of their enforcement, institutional quality, remittances, trust, and inflation. However, the results of studies in this line of literature are very diverse (see section 2 for more details).

This paper offers a systematic and quantitative review of the literature on the drivers of financial development. For this purpose, we use meta-regression analysis (MRA), which is a set of statistical techniques that has been developed to identify and quantify associations drawn

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<sup>1</sup> Some recent studies suggest that the relationship between financial and economic development may be non-linear. For instance, Arcand *et al.* (2015) report that at intermediate levels of financial depth, there is a positive relationship between the size of the financial system and economic growth, but at high levels of financial depth, more finance is associated with less growth. Likewise, Cecchetti and Kharroubi (2012) find that financial development has a non-linear impact on aggregate productivity growth.

<sup>2</sup> Some studies analyse the effect of income inequality on financial development; see, for instance, Madsen *et al.* (2018) and references cited therein.

from an existing body of literature (Stanley, 2001; Stanley and Doucouliagos, 2012; Schmidt and Hunter 2015). MRA is based on a focused examination of the role of methodological, specification and data factors on, in our case, the reported effects of the drivers of financial development.

The aims of our meta-regression analysis are to: (1) provide a statistical synthesis of the existing research on the drivers of financial development; (2) assess the competing claims made about the impact of drivers of financial development; (3) explore the sensitivity of reported empirical results; and (4) investigate and correct the evidence base for publication and misspecification biases. It is well known that methodological, specification and data differences affect empirical estimates (Stanley, 2001). These choices can create heterogeneity in reported estimates making it very difficult for conventional narrative reviews to make robust and valid inferences. Meta-analysis enables us to draw statistical inferences from the extant evidence base. Through meta-analysis, we can correct the evidence for any publication and misspecification bias, explain some of the heterogeneity in reported results, identify what information has been successfully replicated in the evidence base, and quantify the relative importance of various determinants of financial development. This has the benefit of offering information for evidence-based policies towards financial development and can also guide future research.

We have collected 92 studies (yielding 1900 estimates) analyzing the drivers of financial development. As shown in more detail in section 2, the number of potential drivers considered in these studies is striking. Our results suggest that institutional quality is positively correlated to both private sector credit and stock market capitalization (both as share of GDP). In nations with French civil law, institutional quality has no effect on financial development. Domestic financial openness has a positive effect on private credit and stock market development, while trade openness appears only important for stock market capitalization. Inflation has an adverse effect on both proxies for financial development, but its effect is larger for stock market capitalization. Finally, we conclude that the literature has not yet robustly established that remittances and trust matter for financial development.

The paper is structured as follows. Section 2 offers a summary of the main drivers of financial development as identified in the literature and explains the reasons why these variables may affect financial development. This section also describes the proxies used to test these main drivers of financial development. Section 3 describes the data used in our analysis.

Section 4 outlines the methodology and section 5 presents our main results. Section 6 concludes.

## **2. Drivers of financial development**

### *2.1 Law and finance: creditor rights, investor protection, enforcement, information and legal origin*

In their seminal contributions, La Porta *et al.* (1997; 1998) argue that differences in financial systems around the world can be traced in part to the differences in the protection of shareholders and creditors, as reflected by *legal rules* and the *quality of their enforcement*. For instance, if lenders feel that regulations do not protect them and that their chance of taking control over the assets pledged as collateral is uncertain, they are likely not to extend credit since the implicit bankruptcy risk will severely reduce their expected earnings (Galindo and Micco, 2004).

Furthermore, according to La Porta *et al.* (1997; 1998), protection of legal rights and contract enforcement vary systematically by *legal origin*, which is either English, French, German, or Scandinavian.<sup>3</sup> La Porta *et al.* argue that the English common law tradition protects the rights of shareholders and creditors best, while the French civil code is associated with less efficient contract enforcement and weaker protection of shareholders and creditors. Countries with German or Scandinavian legal origins are said to have intermediate levels of protection, but the highest level of contract enforcement. As pointed out by Beck *et al.* (2003a), most research on the law and finance theory focuses on the differences between the two most influential legal traditions, that is, the British Common law and the French Civil law. Whereas British colonizers advanced a legal tradition that fosters financial development, colonizers that spread the French Civil law implanted a legal tradition that is less conducive to financial development.<sup>4</sup>

The law and finance theory can be tested by examining whether legal origin is related to a measure of financial development, or by examining whether proxies for creditor and shareholder protection and contract enforcement are related to financial deepening, or both.

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<sup>3</sup> Djankov *et al.* (2007) add a fifth category: socialist (transition). The countries in this category have inherited Soviet laws. More recent studies (like de la Torre *et al.*, 2013) use information from the World Bank's Doing Business database, which provides indicators of contract enforcement, such as contract enforcement costs, number of days to enforce a contract and the number of procedures to enforce a contract.

<sup>4</sup> Levine *et al.* (2017) find no association between slave trade and indicators of the quality of the legal system. They argue that this is consistent with the view that Europeans exported legal origins that continue to shape the financial contracting environment.

La Porta *et al.* (1997) consider legal origin, contract enforcement (the ‘law and order’ index from ICRG; see below) and some proxies for investor protection in their cross-section model for stock market capitalization. They conclude that “our shareholder rights variables account for some of the difference between relative market capitalizations of different legal families, but that the family effects are also significant.” (p. 1142). Levine *et al.* (2000) conclude that countries with a German legal origin have better developed financial intermediaries. Levine (1998; 1999) reports similar results.<sup>5</sup> Levine *et al.* (2000) use differences in the legal rights of creditors, the efficiency of contract enforcement, and accounting system standards in a panel model to explain cross-country differences in the level of financial intermediary development, and find that countries with high scores on these variables tend to have better developed financial intermediaries.

Djankov *et al.* (2007) report for a large cross-section of countries that both better creditor rights (and the presence of credit registries) are associated with a higher ratio of private credit to GDP; in contrast to La Porta *et al.* (1997), in these regressions legal origin dummies are insignificant. (But they also show that common law countries have better creditor rights scores than French civil law countries.) Likewise, Detragiache *et al.* (2005) find that French legal origin is not significant in their sample of low-income countries.

Apart from studies discussed, several other studies report evidence in support of the law and finance view of financial development (see Table A1 in the online appendix). However, some authors argue that other factors may trump legal origin. Four alternatives have been put forward: endowments, political factors, political instability, and culture.

Beck *et al.* (2003a) test the law and finance theory and the *endowments theory* of Acemoglu *et al.* (2001) according to which the disease and geography endowments encountered by the colonizers shaped their colonization strategy and the construction of long-lasting institutions. As Beck *et al.* point out, in an extractive environment, colonizers will not construct institutions that favor the development of free, competitive financial markets because competitive markets may threaten the position of the extractors. In contrast, in settler colonies, colonizers will be much more likely to construct institutions that foster financial development. Using settler mortality as proxy for endowments, Beck *et al.* find evidence that initial

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<sup>5</sup> In their analysis of financial development in 18 industrialized countries, De Bonis and Stacchini (2009) find that creditor rights have a positive effect on the ratio of bank loans to GDP but its coefficient is only significant if the legal origin dummies are left out of the model. In line with the results of Levine *et al.* (2001), they find that the most powerful legal origin is the German one. These results suggest that the German legal system is nearer to the common law tradition than suggested by La Porta *et al.* Cooray (2011) also reaches this conclusion.

endowments explain more of the cross-country variation in financial intermediary and stock market development than legal origin.

Keefer (2007:2) argues that “after controlling for the potential endogeneity of *political influence*, legal origins have no significant impact on financial sector development.” Keefer uses not only a proxy for checks and balances in the political system, but also proxies for the (duration of) the competitiveness of the electoral system and the extent to which voters are informed and finds that these factors are related to credit intermediation, especially if instrumented by colonial origin.

Focusing on *political instability*, Roe and Siegel (2011: 302) conclude that for “many of our regressions, legal origin either fails to predict financial development or is not consistently robust in doing so, but political stability predicts financial development regularly and is more often robust to other influences.” Roe and Siegel (2011) and Girma and Shortland (2008) point out that institutions of investor protection—such as legal rules, courts, and regulators—cannot function well in an unstable political environment. Both studies report that political stability has a significant, consistent, and substantial impact on financial market development.

Stulz and Williamson (2003) question the relevance of legal origin in explaining creditors’ rights and contract enforcement. They argue that a country’s principal religion (their main proxy for ‘*culture*’) predicts the cross-sectional variation in creditor rights better than a country’s legal origin.<sup>6</sup> Catholic countries protect the rights of creditors less well than protestant countries. They also show that culture is related to the enforcement of rights, with Catholic and especially Spanish-speaking Catholic countries having weaker enforcement of rights (language is their other proxy for culture). The authors also conclude that stock market capitalization is correlated with a civil law dummy, but banking development is correlated with culture.

## *2.2 Institutional quality: political and financial risk, democracy, governance, and economic freedom*

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<sup>6</sup> According to Stulz and Williamson (2003), both the Muslim and the Catholic faiths are or have been hostile to the payment of interest and therefore anti-finance, while the Catholic faith is organized in a more hierarchical manner than Protestantism and hence tends to work in favor of the centralization of power. However, Djankov *et al.* (2007) and Beck *et al.* (2003) do not find that religion is related to financial development.



The law and finance theory points to the importance of the quality of legal institutions, notably when it comes to contract enforcement/rule of law. Other studies employ different indicators of *institutional quality*, which are argued to affect financial development. The reasoning why institutional quality matters is very similar as under the law and finance theory. For instance, Law and Azman-Saini (2012: 218) argue: “if institutions are inadequate, the benefits of renegeing on a financial contract can be so pronounced that they prevent the realization of the contract itself. In addition, good institutions are required to ensure the ability of the financial markets to channel resources so as to finance productive activities.” However, the proxies for institutional quality differ across studies.

Law and Azman-Saini (2012) employ *ICRG* data (and World Bank governance data, see below), as do, among others, Perotti and van Oijen (2001), Detragiache *et al.* (2005), Law (2009), Hanh (2010), Ayadi *et al.* (2015) and Trabelsi and Cherif (2017). *ICRG* classifies country risk into three different categories: political risk (including corruption, law and order, and bureaucratic quality), financial risk (including repudiation of contracts by the government and risk of expropriation, as also used in the law and finance literature) and economic risk (including inflation).<sup>7</sup> Each indicator consists of different components of country risk, for which every country receives a score on a scale of 1 to 100. These different components are then weighted to construct the country’s rating for each category. Whereas some authors use these aggregated data, others employ (combinations of) subcomponents.

Other authors focus on the extent to which *democratic institutions* are linked to financial development. Pagano and Volpin (2001) argue that countries with closed and static political regimes tend to resist the availability of external financing, since the ensuing competition would threaten the entrenched powers of the political elite. Several studies (including Girma and Shortland, 2008; Huang 2010; Bhattacharyya and Hodler, 2014) report support for this view, mostly using the Polity index.<sup>8</sup> However, other studies (e.g. Almarzoqi *et al.*, 2015) do not report supportive evidence for the view that democratic institutions foster financial development.

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<sup>7</sup> Glaeser *et al.* (2004: 276) argue that these proxies for institutional quality are not institutions proper. Referring to *ICRG* data, they argue that these “include subjective assessments of risk for international investors along such dimensions as law and order, bureaucratic quality, corruption, risk of expropriation by the government, and risk of government contract repudiation. ... It is plain that these measures reflect what actually happened in a country rather than some permanent rules of the game.”

<sup>8</sup> Polity measures the degree to which a polity is characterized by autocratic or democratic features (full autocracy scoring -10, full democracy +10). The maximum score is allocated to democracies in which the executive is chosen in free and fair elections with universal suffrage and there are substantial checks and balances constraining the chief executive’s power. See <http://www.systemicpeace.org/polityproject.html> for details.

Tressel and Detragiache (2008) and David *et al.* (2014) consider another measure of institutional quality, namely *constraints on the power of the executive*, which also comes from the Polity database. This variable captures the official (de jure) discretionary leeway that the executive branch has in changing and implementing new policies. Acemoglu and Johnson (2005) consider this variable as a proxy for secure property rights. Herger *et al.* (2008) conclude that institutions constraining the political elite from expropriating financiers tend to promote financial development. Acemoglu and Johnson (2005) also report that constraints on the executive are significant in their estimates of financial development.

Some studies (e.g. Cooray, 2011; Adarov and Tchaidze, 2011; Luca and Spatafora, 2012; Law and Azman-Saini, 2012; Le *et al.*, 2016) focus on *governance*, using the average of the World Bank's Worldwide Governance indicators, which consist of six dimensions of governance: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption (see e.g. Kaufmann *et al.*, 2009). Some of these dimensions (notably regulatory quality and rule of law) are very similar to elements covered in the ICRG data set, while the voice and accountability dimension can be regarded as a proxy for the level of democracy. The dimension political stability and absence of violence can be regarded as a proxy for political instability. The studies referred to above find evidence that better governance enhances financial development.

Finally, a few studies use (components of) some *economic freedom* measure to proxy institutional quality (e.g. Li, 2007; Billmeier and Massa, 2009; Hauner, 2009; Ahmed, 2013). The cornerstones of economic freedom are personal choice, voluntary exchange, freedom to enter markets and compete, and security of the person and privately-owned property. Both the Fraser Institute and the Heritage Foundation publish economic freedom indicators.<sup>9</sup> The studies referred to above (except for Hauner, 2009) find evidence that more economic freedom enhances financial development.

There is strong support for the view that institutional quality fosters financial deepening (see Table A1 in the online appendix), although some studies report mixed or non-linear effects. For instance, Allen *et al.* (2012) conclude that the World Bank governance index that appears to be an important determinant of banking development in the rest of the developing world, loses its explanatory power in the context of Africa, while Law and Azman-Saini (2012) report a non-linear effect of institutional quality on stock market development.

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<sup>9</sup> See <https://www.fraserinstitute.org/studies/economic-freedom> and <https://www.heritage.org/index/>.

### 2.3 Trade and financial openness

Several papers examine whether trade and/or financial openness affect financial development. Two reasons have been suggested why trade openness may matter. First, Svaleryd and Vlachos (2002) emphasize the role of risk diversification. As openness may be associated with greater risks, such as increased exposure to external demand shocks or foreign competition, it will create new demands for external finance. Firms will need credit in order to overcome short-term cash flow problems and adverse shocks (Huang and Temple, 2005).<sup>10</sup>

Second, an open economy may weaken the incentives and the political power of interest groups to resist financial deepening. Rajan and Zingales (2003) argue that in particular industrial and financial incumbents frequently stand to lose from financial development as it creates opportunities for new firms to become established, which breeds competition and erodes incumbents' rents.<sup>11</sup> Rajan and Zingales (2003) suggest that both dimensions of openness are important. Trade openness without financial openness is unlikely to deliver financial development. Similarly, financial openness alone may not be able to break opposition towards financial development. Their analysis, therefore, suggests that the simultaneous opening of both trade and capital accounts holds the key to successful financial development.

Others disagree. For instance, Chin and Ito (2006) stress the impact of one dimension of financial openness, namely capital account liberalization, on financial development through several channels. First, financial liberalization may mitigate financial repression in protected financial markets, allowing the (real) interest rate to rise to its competitive market equilibrium. Second, removing capital controls allows investors to engage in more portfolio diversification. Third, the liberalization process usually increases the efficiency level of the financial system by weeding out inefficient financial institutions and creating greater pressure for reform of the financial infrastructure (Brown *et al.*, 2013).

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<sup>10</sup> In the model of Do and Levchencko (2004), the impact of trade is expected to be differential across countries. When trade leads to specialization in financially dependent goods, it will lead to growth of the financial system. But when trade leads a country to import the financially dependent goods rather than produce them domestically, the financial system will shrink after trade opening.

<sup>11</sup> In a similar vein, Braun and Raddatz (2008) argue that industrial sectors vary in their preferences regarding the level of financial development. They classify each industry as either a promoter of or an opponent to financial development. Using an event study for a sample of 41 countries that liberalized trade during 1970 to 2000, they find that once trade reforms are implemented, subsequent financial development is linked to the change in the relative strength of promoters and opponents of improved finance in the countries' industrial base. Countries where trade liberalization results in an increase in the relative strength of promoters end up with a significantly larger financial system than those countries where trade liberalization favors those who oppose financial development.

The results of studies focusing on the impact of *trade openness* on financial development are rather mixed (see Table A1 in the online appendix).<sup>12</sup> For instance, Huang and Temple (2005) use panel data to examine whether increases in openness are followed by increases in financial development, and whether this effect persists into the long run. They find strong support for this hypothesis in the sample as a whole, and in the lower-income group. A few other papers also report that trade openness contributes to financial deepening (including Ben Naceur *et al.*, 2008; Herger *et al.*, 2008; Huang, 2010; Almarzoqi *et al.*, 2015). However, other studies report a non-significant effect (e.g. Stulz and Williamson, 2003; Chinn and Ito, 2006; De Bonis and Stacchini, 2009), or even a negative effect (Gries *et al.*, 2009; Kim *et al.*, 2011; Ahmed, 2013; Fromentin, 2018).<sup>13</sup>

Several studies have examined the impact of *capital account openness* on financial development. Chin and Ito (2006) evaluate the linkages between capital account openness and financial development for a sample of 108 countries from 1980 to 2000. They conclude that financial openness contributes to equity market development, but only when a threshold level of general development of legal systems and institutions has been attained. Ito (2006) carries out an analogous exercise focusing on developing and emerging market countries and finds that the impact of capital account openness on the depth of stock markets is enhanced in countries with lower levels of corruption and higher levels of rule of law and of bureaucratic quality. Likewise, Klein and Olivei (2008) provide support for the hypothesis that capital account liberalization is more likely to promote financial depth in the presence of better institutional quality.

However, other studies do not (always) confirm the (conditional) positive effect of capital account openness on financial depth. For instance, Trabelsi and Cherif (2017) report that the coefficient on the Chin-Ito measure for capital account openness is not significant in their cross-sectional results for their sub-sample of developing countries. In the panel regression for the sample of middle-income countries they also do not find a significant impact

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<sup>12</sup> Do and Levchenko (2004; 2007) argue that not the level but the composition of trade matters. Countries specializing in financially dependent goods will have a high demand for external finance and thus a high level of financial intermediation, whereas the financial system will be less developed in countries that specialize in goods not requiring external finance. As this issue has received only limited attention, we do not include it in our MRA.

<sup>13</sup> As trade openness may be endogenous, some studies do not use the ratio of exports and imports to GDP (or exports to GDP or imports to GDP) to proxy openness, but instrument trade openness with a measure of natural openness developed by Frankel and Romer (1999); see Table A1 for details about the trade openness measures used in the studies surveyed here. Using the gravity model of trade, Frankel and Romer construct a predicted measure of natural trade openness based on geographical characteristics, such as land area, population, and distance to other countries.

(but once they control for the interaction with institutional quality, they find a significant effect).

Apart from capital account openness, *other proxies for financial openness* have been used. Some studies use *capital flows* for this purpose (e.g. Martínez Pería *et al.*, 2008). Several studies consider foreign direct investment (FDI), but results are mixed. For instance, Soumaré and Tchana Tchana (2015) report a positive impact on stock market capitalization, but a non-significant effect on bank intermediation.

Other studies employ the data of Lane and Milesi-Ferretti (2007) on *countries' foreign assets and liabilities* to proxy financial openness. A nice example is the study by Calderón and Kubota (2009). They conclude that countries that are more integrated to world financial markets tend to have larger private credit, although the effect is not robust in developing countries. Likewise, rising financial openness tends to increase stock market capitalization.

Like several other studies, Tressel and Detragiache (2008) use the data base of Abiad *et al.* (2010) of *financial liberalization* to proxy financial openness.<sup>14</sup> They conclude that financial liberalization policies increase financial development in the long run, but only in countries with sufficient constraints “limiting the power of the executive” (p 4). This suggests that the impact of financial openness on financial development is conditional on institutional quality. Other studies using the data of Abiad *et al.* (2010) also report a significant relationship between their index and financial development (e.g. Tressel and Detragiache, 2008).

Finally, the *presence of foreign banks* is used as proxy for financial openness. Gopalan (2016) finds that foreign bank presence is significantly and positively associated with financial development; this effect is robust across different subsamples based on income classification. The author also reports that the positive relationship between foreign bank presence and financial development becomes stronger in countries with a certain threshold level of institutional development, especially in developing economies. Previous research came to different conclusions. Detragiache *et al.* (2008) use a sample of 89 lower-income countries to test the association between foreign bank presence and private. Both their cross-section and panel estimation results suggest that the foreign bank participation is negatively associated with

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<sup>14</sup> The index of Abiad *et al.* (2010) summarizes de jure changes in credit controls, interest rate controls, entry barriers for banks, regulations, privatization, and restrictions on international financial transactions. When they focus on the different dimensions captured, Tressel and Detragiache (2008) find that notably reforms that remove restrictions on credit allocation, lower reserve requirements, remove limits on credit growth, and facilitate entry into the banking system (including through foreign entry) have a positive, significant, and long-lasting effect on private credit. This suggests that it is reasonable to classify their work under the heading of financial openness.

private sector credit. Claessens and Van Horen (2014) perform a similar exercise for a sample of 111 countries representing all levels of development. They find that their results are broadly in line with those of Detragiache *et al.* (2008) but with some important qualifications: foreign banks only seem to have a negative impact on credit in low-income countries, in countries where they have a limited market share, where enforcing contracts is costly and where the availability of credit information is limited, and when they come from distant home countries.

Some studies examine whether both *trade and financial openness* are *jointly* linked to financial development as suggested by Rajan and Zingales (2003). The evidence of Baltagi *et al.* (2009) suggests that both types of openness are statistically significant determinants of banking sector development. However, their findings provide only partial support to the Rajan and Zingales (2003) hypothesis that both types of openness are necessary for financial development to take place, as the marginal effects of trade (financial) openness are negatively related to the degree of financial (trade) openness. But Ahmed (2013) reports that the coefficient on the interaction variable between financial and trade openness is positive and significant, suggesting that simultaneously opening of both trade and finance sectors significantly promotes financial development. Similar results are reported by Law (2007; 2009), Andrianaivo and Yartey (2010) and Beccera *et al.* (2012).

David *et al.* (2014) focus on the impact of financial openness (proxied by the Chin-Ito index) and trade openness (proxied by the ratio of trade to GDP) for a sample of 34 Sub-Saharan African countries over the 1970-2009 period. In contrast to the studies mentioned above, their evidence does not point to a robust direct link between trade and capital account openness and financial development.

#### 2.4 Remittances

Remittances, that is, funds received from migrants working abroad, have become the second largest source of external finance for developing countries after FDI. Furthermore, remittances are more stable than other international financial flows (Fromentin, 2017). Several studies examine whether remittances are related to financial development. However, the theoretically expected effect is ambiguous.

On the one hand, remittances may have a positive impact on financial development.<sup>15</sup> Several reasons have been put forward to explain this. First, as remittances are typically lumpy, recipients might have a need for financial products that allow for the safe storage of these funds (i.e., bank deposits) even if most of these funds are not received through banks. Furthermore, to the extent that banks provide remittance transfer services, they may reach out to recipients with limited or no financial intermediation (Gupta *et al.*, 2009; Aggarwal *et al.*, 2011). Banks may also be more willing to extend credit to remittance-receiving households, given that remittances are often a significant and stable income source. Moreover, increased loanable funds created by banked remittance transfers can increase overall credit to other, non-remittance-receiving households (Aggarwal *et al.*, 2011).

On the other hand, remittances may have a negative impact on financial development. First, remittances might not increase bank deposits if they are immediately consumed or saved in other ways than via financial intermediaries (Aggarwal *et al.*, 2011). Furthermore, as pointed out by Brown *et al.* (2013), migrants tend to rely heavily on informal transfer channels rather than bank transfers for various reasons, like lower transaction costs and greater efficiency of informal transfer methods, and distrust of banks and financial authorities in the recipient countries. Because remittances can help relax individuals' financing constraints, they might lead to a lower demand for credit and have a dampening effect on credit market development. Remittance-receiving households might choose to rely on migrants abroad rather than on domestic banks for credit, in which case remittances become a substitute for credit. By becoming a substitute for inefficient or inexistent credit markets, remittances help alleviating credit constraints, thereby contributing to an improved allocation of capital and to higher economic growth (Guliano and Ruiz-Arranz, 2009).

Several studies (including Martínez Pería *et al.*, 2008; Billmeier and Massa, 2009; Aggarwal *et al.*, 2011; Cooray, 2012; Shahzad *et al.*, 2016; Fromentin 2017; 2018) report that remittances have a positive impact on financial development (see Table A1 in the online appendix). However, some studies conclude that the effect is stronger in some countries than in others. For instance, Cooray (2012) finds that remittances increase financial sector size more in countries with a low level of government ownership of banks than in countries with a high

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<sup>15</sup> Of course, causality could also run in the other direction. As pointed out by Aggarwal *et al.* (2011), financial development can increase remittances because a well-developed financial system enables large remittance inflows and may increase remittances by reducing the costs of sending remittances.



level of government ownership. The results of Fromentin (2018) suggest a non-linear effect of remittances on bank intermediation.

Some studies find no support for the view that remittances stimulate financial development. For instance, Brown *et al.* (2013) conclude that there is little evidence that remittances promote financial development in their full sample of countries. In fact, if anything, the effect seems to be negative, albeit not large. Likewise, Coulibaly (2015) and Detragiache *et al.* (2005) conclude that there is no evidence supporting the view that remittances promote financial development in SSA countries and low-income countries, respectively.

## 2.5 Trust

A few studies have examined whether trust is associated with financial development. Calderón *et al.* (2002: 191) argue that “even under the assumption that rules are enforceable, financial contracts are intrinsically incomplete, which implies that no contract can fully guarantee that the creditor will recover his or her funds. Thus, even in cases where the rule of law holds, trust will also play a crucial role as a determinant of market depth.” These authors report a positive and economically large effect of trust on the size and activity of financial intermediaries and the extent of stock market development.<sup>16</sup> They also find a differentiated response in countries with different levels of law enforcement: Countries with lower law enforcement have a higher impact of trust on bank intermediation. However, Law and Ibrahim (2013) find that although the role of trust is weakly significant for banking intermediation, there is no significant relationship between social capital and stock market development. Their findings also suggest that institutional quality is more important than trust. But in line with the results of Calderón *et al.* (2001), they also find that in countries with low institutional quality, trust is significantly related to financial development.<sup>17</sup> Finally, Ng *et al.* (2016) use Bayesian model averaging for a cross-section of 60 countries for period from 2000 to 2006 using 37 variables that have been widely employed in previous studies. They conclude that trust is a robust and positive determinant of stock market depth and liquidity as it exhibits a high posterior inclusion probability (PIP).

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<sup>16</sup> They use a measure based on the World Values Survey, where trust reflects the response to the following question: “Generally speaking, would you say that most people could be trusted, or that you cannot be too careful in dealing with people?” The indicator used summarizes the percentage of respondents who state that “most people can be trusted.”

<sup>17</sup> Trust is often considered as an important dimension of social capital. Another dimension of social capital is social norms. Garretsen *et al.* (2004) examine the relevance of social norms as driver of financial development. They conclude that societal norms are a significant determinant of stock market capitalization but not of bank credit.



## 2.6 Inflation

It is widely believed that inflation distorts the incentives for financial development. In particular, moderate to high inflation may discourage financial intermediation, and encourage saving in real assets. An increase in the rate of inflation reduces the real return on assets. This reduction worsens existing credit market frictions, which results in less credit. The financial sector makes fewer loans, there is increased inefficiency in resource allocation, and a diminishing of intermediary activities (Boyd *et al.*, 2001). Likewise, lower inflation reduces the overall level of uncertainty about the ability of borrowers to meet their obligations, and the resulting less risky environment facilitates financial deepening (Dehesa *et al.*, 2007).

As shown in Table A1 in the online appendix, some studies (e.g. Detragiache *et al.*, 2005 and Dehesa *et al.*, 2007) report evidence suggesting that inflation hampers financial depth. At the same time, the negative effects of inflation may be non-linear. Some models suggest that only when inflation exceeds a certain critical level will it have a negative effect on financial development. But there may be another threshold, after which further increases in inflation have no additional detrimental effects on the financial system as all of the damage has already been done (Boyd *et al.*, 2001). Boyd *et al.* (2001) report that financial development has a strong negative relationship with inflation, but only for countries with low-to-moderate rates of inflation. As inflation rises, the marginal impact of additional inflation on banking and stock market development diminishes rapidly. Khan *et al.* (2008) hypothesize that there is a threshold level of inflation above which the effect turns negative. Using a large cross-country sample, they report support for the existence of such a threshold. Their estimates indicate that the threshold level of inflation is generally about 3–6 percent per annum, depending on the specific measure of financial depth that is utilized.

## 3. Data

Our search strategy and reporting closely follows the guidelines provided by Havranek *et al.* (2020). The search for relevant studies involves several databases: Econlit, Web of Science, Repec/Ideas, and Google Scholar. We used combinations of the following broad keywords: ‘financial development’, ‘stock market capitalization’, ‘private credit’, ‘bank credit’, ‘inflation’, ‘institutions’, ‘creditor rights’, ‘civil law’, ‘rule of law’, ‘law and finance’, ‘governance’, ‘democracy’, ‘economic freedom’, ‘institutional quality’, ‘trade liberalization’, ‘trade openness’, ‘financial liberalization’, ‘capital account liberalization’, ‘financial

openness', 'bank reform', 'remittances', and 'trust'. Once a study had been found, we used its references to search for more studies.

To be included in our meta-analysis, a study had to meet three criteria. First, we include only studies using data at the macro-level (thereby ignoring micro-based studies) and studies covering several countries (thereby ignoring single-country studies).<sup>18</sup> The reason is that many of the drivers of financial development as discussed in the previous section are based on cross-country differences, which, by definition cannot be included in micro- and single-country studies. Second, studies had to provide sufficient information from which we could quantify a comparable size effect. That is, studies had to report sample size, regression coefficients, and their standard errors or  $p$ -values or  $t$ -statistics. Studies that did not provide this information could not be included. Third, studies had to report the effect of one of the hypothesized determinants of financial development, i.e., institutional quality, trade openness, financial openness, inflation, remittances, and trust. The search for studies was terminated November 2019. All coding was conducted and checked by three independent coders.

Following these criteria, we identified 80 studies with 1,413 estimates on private credit development, and 40 studies which report 487 estimates on stock market development; a total of 92 independent studies with 1,900 estimates for the meta-analysis.<sup>19</sup> All estimates included in our database were derived from econometric models that investigate the effect of at least one of the various determinants ( $\mathbf{m}$ ) of financial development ( $FD$ ), conditional on a vector of control variables,  $\mathbf{z}$ :

$$(1) \quad FD_{ct} = \alpha_0 + \alpha_m \mathbf{m}_{ct} + \alpha_z \mathbf{z}_{ct} + \varepsilon_{ct} ,$$

where  $c$  and  $t$  index the  $c$ th country in time period  $t$  when panel data are used (the time dimension is removed in cross-sectional studies).

We collect estimates of  $\alpha_m$  and transform these into a comparable measure. Unfortunately, descriptive statistics are frequently either poorly reported or not reported in studies, so that we have little confidence in extracting elasticities or percentage change from reported statistics and estimates.<sup>20</sup> Instead, we opt to use the partial correlation, which measures

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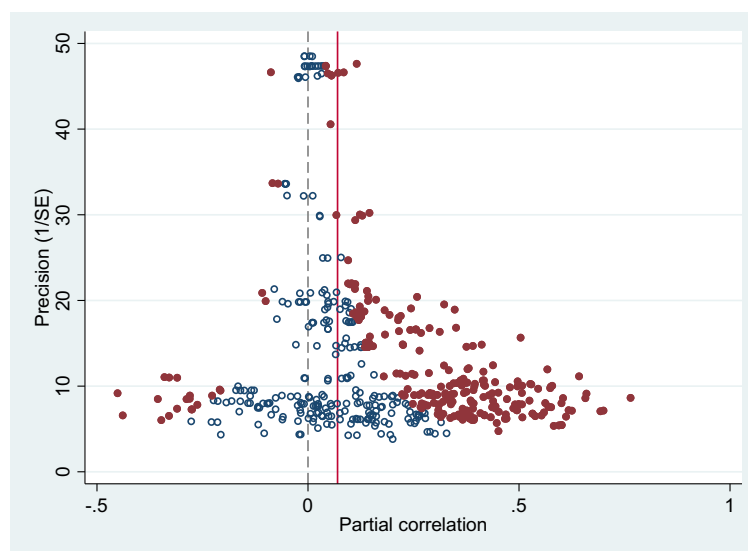
<sup>18</sup> Examples of micro-based analyses are Martínez Pería *et al.* (2008) and Brown *et al.* (2013). A recent example of a country study is Zhang *et al.* (2015) who analyze financial development in China.

<sup>19</sup> Many studies report estimates for both stock market development and private credit. However, 52 studies report only estimates for private credit and 9 studies report only estimates for stock market development.

<sup>20</sup> The main issue here is the scaling used. At times authors report descriptive statistics using one scale and use a different scale in the econometric analysis and it is difficult to identify the exact transformations involved. Using reported descriptive statistics often produces implausibly large elasticities.

the strength of the association between a given variable and financial development, holding constant all other factors.<sup>21</sup>

The partial correlations for private credit are illustrated in Figures 1 to 5, in the form of funnel plots.<sup>22</sup> The funnel plots illustrate the distribution in reported estimates. There is significant heterogeneity in the evidence base, with both positive and negative effects reported for all hypothesized determinants. The studies offer independent replications of the various determinants of financial development. A replication can be deemed to be successful when it presents a statistically significant finding in the same direction. Figures 1 to 5 suggest that many studies fail to replicate the findings of others. By applying meta-analysis, we are able to synthesize the evidence base and analyze these distributions and thereby assess what conclusions can be established from the literature.

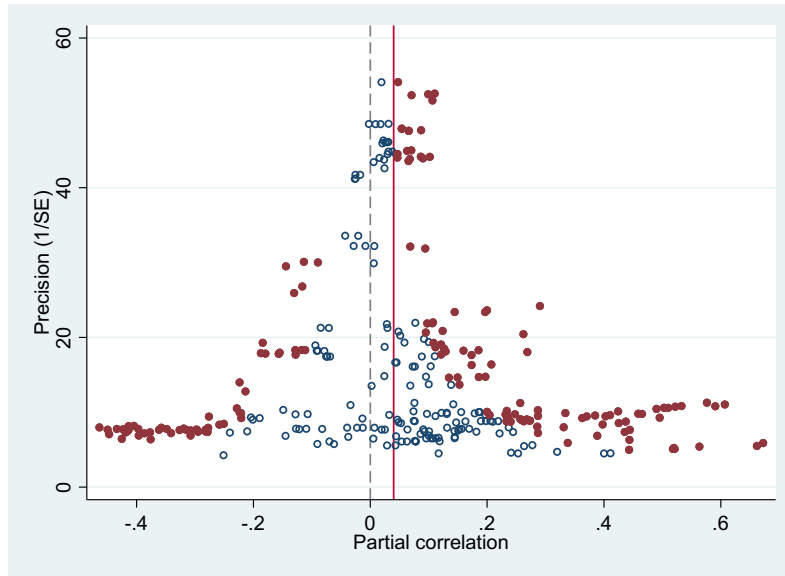


**Figure 1.** Institutions and Private Credit

*Notes:* 503 estimates. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = 0.07$ ). The dotted line indicates a zero correlation.

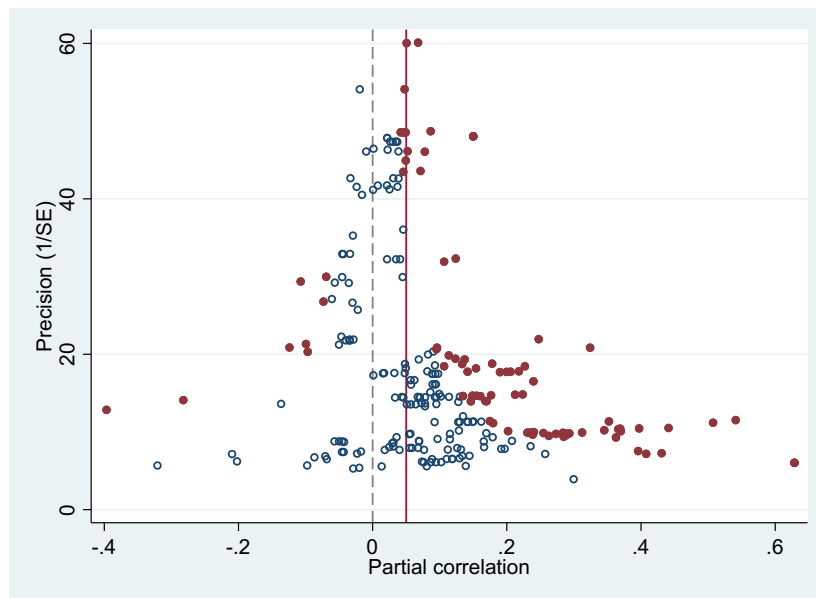
<sup>21</sup> Partial correlations were calculated using the formula:  $t/\sqrt{(t^2 + df)}$ , where  $t$  is the  $t$ -statistic and  $df$  are the degrees of freedom. The standard error of the partial correlation is calculated as:  $SE = \sqrt{(1 - r^2)/df}$ . The partial correlations were also transformed into Fisher  $z$ -values. The meta-analysis results are essentially identical regardless of whether partial correlations or Fisher  $z$ -values are used; we report only results using partial correlations.

<sup>22</sup> Funnel plots for stock market capitalization are available in the online appendix as Figures A1 to A5.



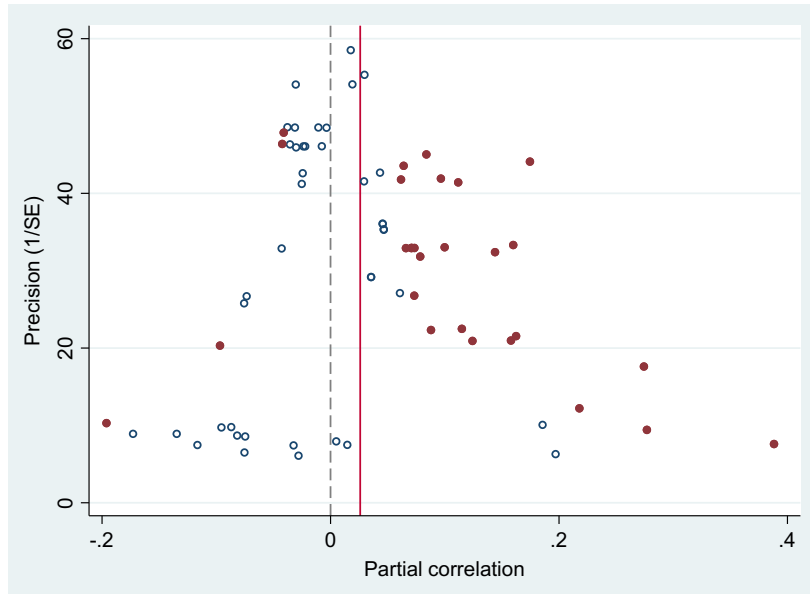
**Figure 2.** Financial Openness and Private Credit

*Notes:* 305 estimates. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = 0.04$ ). The dotted line indicates a zero correlation.



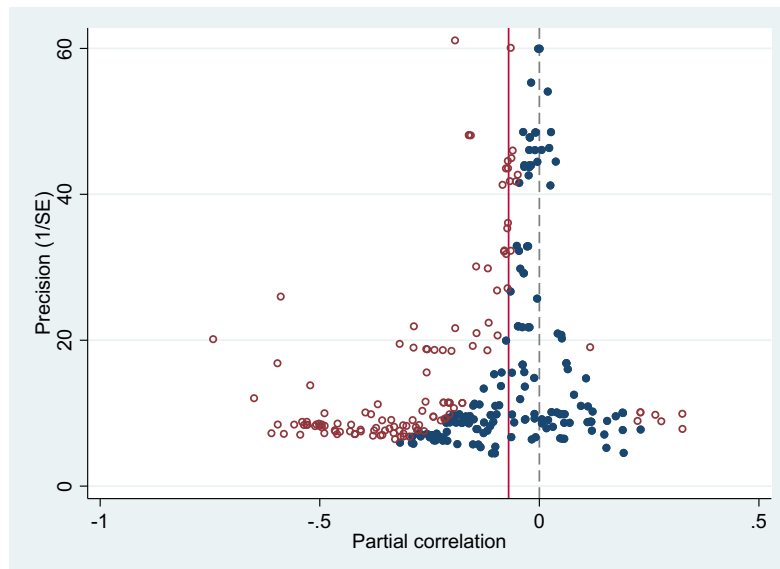
**Figure 3.** Trade Openness and Private Credit

*Notes:* 239 estimates. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = 0.05$ ). The dotted line indicates a zero correlation.



**Figure 4. Remittances and Private Credit**

*Notes:* 69 estimates. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = 0.03$ ). The dotted line indicates a zero correlation.



**Figure 5. Inflation and Private Credit**

*Notes:* 288 estimates. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = -0.07$ ). The dotted line indicates a zero correlation.

#### 4. Methods

The simplest summary of the evidence base is a weighted average of all comparable estimates:

$$(2) \quad r_{ij} = \beta_0 + v_{ij},$$

where  $r_{ij}$  denotes the partial correlation between financial development and the hypothesized determinants,  $i$  and  $j$  index the  $i$ th estimate from the  $j$ th study. Eqn. (2) is estimated by weighted least squares. The estimate's inverse variance provides optimal weights (Stanley and Doucouliagos, 2012). This produces an unconditional meta-average and assumes that amongst a comparable population of estimates, the only source of variation in reported results is random sampling errors.

Drawing credible inference from the evidence base is a major challenge when the evidence base consists of studies with low statistical power, when there is a high degree of heterogeneity in reported findings, and when some findings have been selectively reported e.g., on the basis of their statistical significance or because they match researchers' priors (Ioannidis *et al.*, 2017). Hence, Eqn. (2) will rarely adequately represent the evidence base.

Accommodating heterogeneity in the evidence base requires conditional meta-averages. This involves estimating a meta-regression model:

$$(3) \quad r_{ij} = \beta_0 + \beta_x \mathbf{x}_{ij} + v_{ij},$$

where  $\mathbf{x}$  is a vector of moderator variables that reflect genuine and artificial heterogeneity (described in section 5.2 below). The coefficients on the  $\mathbf{x}$  vector identify and quantify the magnitude of heterogeneity as illustrated in Figures 1 to 5. Heterogeneity can be genuine or an artifact of the way in which research is conducted. For example, the effect of institutional quality on financial development may vary between developed and developing nations and it could vary over time. Moreover, reported estimates could differ because of model specification choices (potentially leading to omitted variable bias) and the choice of indicators of institutional quality. We explicitly model these various dimensions through meta-regression analysis.

In addition to heterogeneity, there is the issue of publication selection bias, whereby some researchers report only statistically significant results, or when some researchers report results that are consistent with their priors, e.g., an adverse effect of inflation or a positive effect of creditor protection on financial development (see Card and Krueger, 1995; Ioannidis *et al.*,

2017; Christensen and Miguel, 2018). The impact of publication bias is to distort meta-averages, typically inflating them by a factor of 2 or more (Ioannidis *et al.*, 2017). Publication selection bias can be identified and corrected from the evidence base by including the standard error of estimated effects,  $SE_{ij}$ , in the meta-regression model:

$$(4) \quad r_{ij} = \beta_0 + \beta_{se}SE_{ij} + \beta_x \mathbf{x}_{ij} + \mathbf{v}_{ij}.$$

If enough researchers select evidence on the basis of its statistical significance, then this will cause a correlation between  $SE_{ij}$  and  $r_{ij}$ .<sup>23</sup> The coefficient on  $SE_{ij}$  provides a test for the presence and magnitude of publication selection bias. Stanley and Doucouliagos (2014) propose a non-linear version:

$$(5) \quad r_{ij} = \beta_0 + \beta_{se}SE_{ij}^2 + \beta_x \mathbf{x}_{ij} + \mathbf{v}_{ij}.$$

Eqn. (5), is known as the PET-PEESE (Precision Effect Test-Precision Effect Estimate with Standard Error) model and is the primary meta-regression model used in this paper. PET-PEESE has the lowest bias of all meta-analysis methods and lowest rate of false positives and false negatives (Stanley and Doucouliagos, 2014; Carter *et al.*, 2015; Kvarven *et al.*, 2019).

Eqn. (5) is estimated by weighted least squares, using inverse variance weights. Inverse variance weights can be either fixed effect or random effects.<sup>24</sup> Fixed effects weights assume that there is a single underlying effect that all studies are estimating. Random effects weights allow for a distribution of effect sizes. We present the results for both sets of weights. However, random effects weights have been shown to produce more biased estimates when there is publication selection (Stanley and Doucouliagos, 2015; 2017). Further, Kvarven *et al.* (2019) show that random effects exaggerate meta-averages by nearly three-fold and have high rates of false positives; they find evidence of an empirical effect when there is none. Simulations show that unrestricted weighted least squares (UWLS) produces meta-averages with smaller bias and smaller MSE, especially in cases where there is heterogeneity in the evidence base and some of the reported estimates have been preferentially chosen on the basis of their statistical significance (Stanley and Doucouliagos, 2015; 2017).

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<sup>23</sup> If enough researchers are searching for a statistically significant effect, they will be estimating variants of models until they get a high enough  $t$ -statistic. This will then result in a correlation between the reported regression coefficients and their standard errors.

<sup>24</sup> These terms refer to the weights used in meta-analysis and not to the panel structure of the data. Fixed effects weights =  $1/SE_{ij}^2$ . Random effect weights =  $1/(SE_{ij}^2 + \tau^2)$ , where  $\tau^2$  denotes the between-study heterogeneity variance.

## 5. Results

### 5.1 Unconditional meta-averages

The meta-analyses results are presented in Tables 1 and 2, for institutional quality and all other variables of interest, respectively. For both tables, Panel A reports the results for private credit and Panel B for stock market capitalization. As discussed in the methods section above, while we report random effects meta-averages, we rely on the UWLS results for inference as these are less biased (Stanley and Doucouliagos, 2014; Stanley *et al.*, 2017; Kvarven *et al.*, 2019).<sup>25</sup>

Table 1 reports the meta-analyses for estimates relating to institutional quality. Column (1) combines all estimates of the effects of institutional quality using various measures for the quality of institutions. These results suggest a small positive effect of institutional quality on private credit ( $r = 0.07$ ) and a slightly higher effect on stock market capitalization ( $r = 0.08$ ).

Columns (2) to (8) present meta-analyses of the main specific measures for institutional quality. Columns (2) and (3) focus on measures relating to creditor protection and French civil law, respectively. Column (4) presents the results for estimates that use an “aggregate” measure of institutional quality, i.e. one that combines several individual components such as control of corruption, government effectiveness, and rule of law (see section 2). Columns (5) and (6) focus on two of these components: the rule of law and governance quality, respectively. Column (7) looks at democracy and column (8) at economic freedom. With the exception of French law, all the other dimensions of institutions have a positive effect on financial development, proxied by private credit. French law has a small negative effect, but this is only weakly statistically significant.

With regard to stock market capitalization, creditor protection, overall institutional quality, and democracy have positive and statistically significant correlations. The other dimensions also have positive correlations (except for French civil law), but they are estimated with low precision, most likely because of the thin evidence base.

Comparing the magnitude of the estimated partial correlations, the rule of law appears to be nearly five times more important, and governance twice as large, for private credit than for stock market capitalization. Creditor protection is also more important for private credit than it is for stock market capitalization. In contrast, democracy appears to be more important for stock market capitalization.

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<sup>25</sup> Tables A2 and A3 in the online appendix report results using sample size weights; these results are similar to those using inverse variance weights.



**Table 1.**

Institutions and financial development, unconditional meta-averages

	All estimates (1)	Creditor protection (2)	French law (3)	Overall institutional quality (4)	Rule of law (5)	Governance (6)	Democracy (7)	Economic freedom (8)
<i>A. Private credit</i>								
UWLS	0.071 (0.001)	0.126 (0.001)	-0.036 (0.065)	0.127 (0.001)	0.316 (0.000)	0.127 (0.008)	0.035 (0.053)	0.212 (0.072)
RE	0.158 (0.000)	0.231 (0.000)	-0.069 (0.073)	0.186 (0.000)	0.356 (0.000)	0.200 (0.001)	0.092 (0.022)	0.208 (0.080)
N [k]	503 [62]	95 [22]	82 [22]	94 [21]	34 [13]	54 [15]	78 [11]	20 [4]
$I^2$	82%	75%	67%	83%	66%	77%	73%	55%
<i>B. Stock market capitalization</i>								
UWLS	0.079 (0.000)	0.085 (0.046)	-0.036 (0.430)	0.133 (0.000)	0.066 (0.173)	0.065 (0.135)	0.090 (0.003)	0.191 (0.205)
RE	0.126 (0.000)	0.127 (0.027)	-0.156 (0.089)	0.152 (0.001)	0.278 (0.131)	0.103 (0.115)	0.130 (0.044)	0.225 (0.182)
N [k]	195 [28]	16 [6]	24 [8]	49 [11]	24 [6]	27 (8)	38 (5)	5 [2]
$I^2$	78%	67%	72%	73%	80%	68%	79%	37%

*Notes:* Each cell reports a separate regression. The dependent variable is the partial correlation between financial development and each of the measures of institutions proposed in the literature. Panels A and B present results for private credit and stock market capitalization, respectively. UWLS denotes unrestricted weighted least squares. RE denotes random effects weights.  $I^2$  measures the percent of variation in reported estimated that can be attributed to heterogeneity. N and k denote the number of estimates and the number of studies, respectively. All models estimated with weighted least squares using inverse variance weights. *p*-values reported in parentheses using standard errors corrected for within-study clustering.

Table 2 suggests that both trade and financial openness have a positive effect on private credit and stock market development, whilst inflation has an adverse effect. Trade and financial openness appear to be more important for stock market development than for private credit. The effect of inflation on both measures for financial development is about the same. The extant studies on remittances show a positive effect, but this is not statistically significant and this finding needs to be replicated by additional studies. The evidence base for the impact of trust on financial development – which we find to be negative for stock markets – is particularly thin. We conclude that the literature has not yet established that remittances and trust matter for financial development.

**Table 2.**

Other determinants of financial development, unconditional meta-averages

	Openness		Remittances (3)	Trust (4)	Inflation (5)
	Financial openness (1)	Trade openness (2)			
<i>A. Private credit</i>					
UWLS	0.042 (0.006)	0.050 (0.000)	0.026 (0.220)	0.210 (0.220)	-0.070 (0.000)
RE	0.052 (0.236)	0.083 (0.000)	0.036 (0.089)	0.210 (0.220)	-0.139 (0.000)
N [k]	305 [43]	239 [40]	69 [14]	10 [2]	288 [47]
$I^2$	81%	73%	80%	0%	84%
<i>B. Stock market capitalization</i>					
UWLS	0.133 (0.000)	0.092 (0.039)	0.214 (0.121)	-0.076 (0.699)	-0.068 (0.000)
RE	0.154 (0.000)	0.106 (0.018)	0.214 (0.121)	-0.069 (0.708)	-0.080 (0.006)
N [k]	110 [19]	119 [22]	6 [2]	8 [3]	49 [16]
$I^2$	72%	83%	0%	75%	52%

*Notes:* Each cell reports a separate regression. The dependent variable is the partial correlation between financial development and each of the hypothesized determinants. Panels A and B present results for private credit and stock market capitalization, respectively. UWLS denotes unrestricted weighted least squares. RE denotes random effects weights.  $I^2$  measures the percent of variation in reported estimated that can be attributed to heterogeneity. N and k denote the number of estimates and the number of studies, respectively. All models estimated with weighted least squares using inverse variance weights.  $p$ -values reported in parentheses using standard errors corrected for within-study clustering.

### 5.2 Meta-regression analysis

Tables 1 and 2 also report  $I^2$ , a measure of between study heterogeneity. Simulations show that when  $I^2$  exceeds 80% conventional meta-average methods reported in Tables 1 and 2 become less reliable at representing the evidence base (Stanley, 2017). In such cases, meta-regression analysis is recommended to accommodate the heterogeneity in estimates. That is, with large heterogeneity, there is a distribution of effects and an unconditional meta-average will not adequately represent the research record. However, as evidenced by Tables 1 and 2 the evidence base is thin (i.e. only a limited number of regressions) for several of the potential determinants. This poses a challenge, as regression-based tests will have low power to detect empirical effects for these thin-evidence-based dimensions. Hence, our meta-regressions focus on the areas where the evidence base is deepest. Thus, we do not attempt meta-regression for the effects of remittances and trust. Our MRA is based on the *FAT-PET-PEESE* model (Eqn. (5)). The meta-regression results are presented in Tables 3 to 6, for institutions, trade openness, financial openness, and inflation, respectively.

### 5.2.1 Institutions

As highlighted by Table 1 above and Table A1 in the online appendix, there are several measures used in the literature to investigate the impact of institutions on financial development. Nevertheless, the literature considers the various estimates to be a pool of estimates from a common population that reflects the impact of institutions broadly. Hence, it is valid to combine the various estimates into one meta-regression model. This has the benefit of increasing sample size and statistical power for the meta-regressions. This also enables us to test whether the various measures and dimensions of institutions do make a difference to reported findings.

Table 3 presents the MRA results for institutions. Columns (1)-(4) refer to financial development as measured by private credit, while columns (5)-(8) refer to stock market capitalization.

The base is an “aggregate” effect of the quality of institutions on financial development. Here we use all estimates that use various measures (“aggregate” measures and measures of individual components, such as the rule of law), pool these and then test whether these alternate measures lead to quantitatively different results. The dependent variable is the partial correlation between financial development (either private credit or stock market capitalization) and any measure of institutional quality.

Columns (1) and (5) include *Standard error sqr* (SESQR) to correct for publication bias, and eight variables that reflect the main differences in the way institutions are measured: French civil law, rule of law, creditor protection, democracy,<sup>26</sup> governance, economic freedom, contract enforcement or legal formalism, and credit information (see section 2). Coefficients on these variables indicate how their inclusion in the model affects the positive partial correlation between financial development and institutional quality. The coefficients on these variables quantify how different (larger or smaller) the effect of institutions is relative to the base (institutional quality).

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<sup>26</sup> Some studies use larger scores of a democracy index to denote a greater degree of democracy, while others use the same scores to denote less democracy. Where necessary, we changed the sign on the reported coefficient democracy so that all estimates are comparable and measuring the same directional move, i.e., a positive correlation denotes that democracy increases financial development.

In columns (2) and (6), we add five variables that reflect econometric specification differences: control for per capita GDP, control for trade openness, control for financial openness, control for inflation, and control for remittances and trust.<sup>27,28</sup>

In columns (3) and (7), we add seven variables that reflect data and estimation differences: samples that include only developing nations, panel data, the average year of the data used,<sup>29</sup> whether the estimate was derived correcting for endogeneity, and whether a non-OLS estimator was used (typically GMM).<sup>30</sup> We also add the variable *Focus of study* to columns (3) and (7). This is a binary variable taking the value of 1 if the study focused on institutions and 0 if it is included institutions as a control.<sup>31</sup> With the inclusion of this variable in the MRA, we can test whether studies that are specifically interested in a particular variable produce different results. Arguably, these studies provide more accurate estimates of the underlying empirical effect on the grounds that the authors have thought deeper about the relevant modelling, measurement, and estimation issues. However, it is also possible that some authors that are interested in a particular variable might seek more actively to derive certain results. That is, it is possible that publication selection is more pronounced in areas where the authors are interested as opposed to mere controls. To allow for this possibility, we interact *Focus of study* with the *SESQR*.

Finally, to explore robustness and accommodate model uncertainty, in columns (4) and (8) we present results from Bayesian model averaging, reporting the weighted average of the estimated coefficients and the posterior mean to standard deviation ratio (in brackets).<sup>32</sup> Table A8 in the online appendix reports results of a general-to-specific modelling strategy, as recommended by Stanley and Doucouliagos (2012).

For both private credit and stock market capitalization, French civil law has a negative coefficient, indicating that French civil law has significantly smaller correlations than

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<sup>27</sup> We combined the latter two factors to conserve degrees of freedom.

<sup>28</sup> The inclusion of per capita GDP can create econometric problems. At one level, financial development will be influenced by per capita GDP. However, as discussed in section 1, there is an extensive literature showing reverse causality between these factors.

<sup>29</sup> For example, if a study used data from 1970 to 2000, the average year is 1985.

<sup>30</sup> We code estimates as *Non-OLS* if they do not use OLS *and* do not accommodate endogeneity in the variable of interest. For example, a study may use GMM and treat one variable as endogenous but not treat the variable of interest (e.g. institutions) as endogenous.

<sup>31</sup> We deemed a study to focus on institutions if institutions (or inflation, trade and financial openness) was included in the title or if it was specifically mentioned in the abstract. This signals that the authors considered institutions to be an important focus of their inquiry.

<sup>32</sup> A posterior mean/SD ratio greater than 1 suggests that a variable is robustly correlated with our dependent variable. A ratio of 1.3 is equivalent to a 90% confidence interval (see Masanjala and Papageorgiou, 2008). We include the constant and SESQR in all estimated models.

institutional quality with both types of financial development. For private credit, the rule of law has a stronger correlation than an overall index of institutional quality. Democracy has a negative coefficient in private credit meta-regressions, suggesting that democracy is not as important as overall institutional quality.

Samples that include only developing (and/or emerging) nations, do make a difference. Specifically, larger correlations are presented for stock market capitalization. That is, institutions appear to be more important for the development of stock markets in developing and emerging nations. This is not surprising as the development of stock markets arguably depends more on having the proper institutions in place than the development of banking. However, it might also reflect a selection bias as many developing countries hardly have stock markets. Studies that control for trade openness report larger correlations between institutions and private credit. In contrast, controlling for remittances or trust results in smaller correlations for private credit.

*Focus of study* is not statistically significant, suggesting that studies that specifically focus on modelling the effects of institutions report similar correlations between institutional quality and financial development as do studies that include institutions as a control variable. However, we find that two publication bias terms are jointly statistically significant, and the coefficient on *Focus of study* \* *SESQR* has a positive sign suggesting that studies that specifically focus on the role of institutions are more likely to report larger statistically significant effects.<sup>33</sup> Finally, correcting for the endogeneity between institutions and financial development appears to be important for stock market capitalization. We find that once all other study characteristics are controlled for, correcting for endogeneity produces larger correlations.

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<sup>33</sup> When both *Focus of study* and *Focus of study* \* *SESQR* are included in the MRA, the coefficient on *Focus of study* reflects the average value of these studies corrected for preferential reporting.

**Table 3.**  
Institutions and financial development, meta-regression analysis

	PC	PC	PC	PC	SMC	SMC	SMC	SMC
	(1)	(2)	(3)	posterior mean/SD	(5)	(6)	(7)	posterior mean/SD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SESQR	7.631*** (4.637)	7.975*** (4.727)	-3.869 (-1.181)	-1.293 [-0.60]	5.999*** (3.142)	6.954*** (4.775)	-0.689 (-0.163)	5.452† [2.36]
French legal	-0.166*** (-3.912)	-0.151*** (-3.035)	-0.152*** (-2.828)	-0.157† [-9.46]	-0.159** (-2.523)	-0.233*** (-3.318)	-0.237** (-2.597)	-0.135† [-3.70]
Rule of law	0.117* (1.947)	0.141** (2.233)	0.163*** (2.863)	0.136† [3.33]	-0.061 (-1.666)	0.003 (0.061)	0.011 (0.185)	-0.001 [-0.11]
Creditor protection	-0.012 (-0.343)	0.019 (0.425)	0.024 (0.548)	0.001 [0.08]	-0.032 (-0.835)	-0.024 (-0.435)	-0.024 (-0.337)	0.001 [0.08]
Democracy	-0.074** (-2.295)	-0.063 (-1.656)	-0.065 (-1.551)	-0.071† [-4.70]	-0.027 (-0.975)	-0.110* (-2.039)	-0.083 (-1.272)	-0.016 [-0.46]
Governance	-0.022 (-0.543)	-0.004 (-0.079)	0.017 (0.333)	-0.001 [-0.10]	-0.063 (-1.532)	-0.074 (-1.606)	-0.061 (-0.915)	-0.005 [-0.26]
Economic freedom	0.019 (0.259)	0.029 (0.448)	0.081 (1.627)	0.013 [0.37]	0.058 (1.514)	0.048 (0.744)	0.040 (0.511)	0.023 [0.45]
Legal formalism	-0.001 (-0.011)	0.015 (0.236)	-0.036 (-0.564)	-0.003 [-0.15]	0.078 (0.929)	0.023 (0.217)	0.013 (0.135)	0.005 [0.19]
Creditor information	-0.003 (-0.062)	0.033 (0.682)	0.057 (1.189)	0.004 [0.26]	-0.040 (-1.439)	-0.029 (-0.462)	-0.021 (-0.285)	0.001 [0.01]
Income		-0.012 (-0.511)	-0.020 (-0.931)	-0.001 [-0.11]		-0.022 (-0.533)	0.022 (0.420)	-0.001 [-0.14]
Remittances/trust		-0.062 (-1.649)	-0.098** (-2.336)	-0.059† [-2.13]		0.019 (0.227)	0.069 (1.242)	0.004 [0.18]
Trade openness		0.043 (1.520)	0.037 (1.169)	0.039† [2.15]		0.076 (1.553)	0.052 (1.273)	0.009 [0.38]
Financial openness		0.007 (0.225)	0.043 (1.177)	0.006 [0.40]		-0.072 (-1.489)	-0.111 (-1.571)	-0.013 [-0.50]
Inflation		0.018 (0.777)	0.040 (1.510)	0.011 [0.62]		-0.039 (-1.046)	-0.017 (-0.471)	-0.024 [-0.71]
Developing			-0.049* (-1.766)	-0.005 [-0.39]			0.083* (1.705)	0.082† [1.85]
Non-OLS			0.011 (0.783)	0.001 [0.22]			0.024 (0.530)	0.001 [0.02]
Focus of study			-0.015 (-0.677)	-0.001 [-0.09]			-0.069 (-1.291)	-0.007 [-0.35]
Focus of study* SESQR			10.150*** (3.340)	8.831† [5.01]			7.535** (2.448)	0.689 [0.31]
Panel			-0.095* (-1.867)	-0.061† [-1.79]			-0.015 (-0.181)	-0.001 [-0.01]
Average year 1992			-0.000 (-0.194)	-0.001 [-0.16]			-0.003 (-0.950)	-0.001 [-0.41]
Endogenous			-0.026 (-1.089)	-0.003 [-0.28]			0.095** (2.506)	0.088† [2.70]
Constant	0.100*** (3.350)	0.062 (1.199)	0.175** (2.244)	0.133† [3.68]	0.104*** (3.720)	0.116** (2.263)	0.156 (1.250)	0.071† [2.66]
Observations	503	503	503	500	195	195	195	195
Number of studies	62	62	62	62	28	28	28	28
Joint bias test			0.004				0.014	
Adjusted R <sup>2</sup>	0.344	0.367	0.424	-	0.236	0.281	0.422	-

Notes: The dependent variable is the partial correlation between financial development and a measure of institutions. SESQR is the standard error squared. PC and SMC denote private credit and stock market capitalization, respectively. Estimation using unrestricted weighted least squares, using inverse variance weights. *t*-statistics reported in parentheses using standard errors corrected for within-study clustering. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, and 1%, levels, respectively. Columns (4) and (8) report the weighted average of regression coefficients and the posterior Mean/SD ratio in brackets from Bayesian model averaging. † denotes standard error band does not include zero. Joint bias test reports the *p*-value of the statistical significance of both SESQR and Focus of study\* SESQR.

### 5.2.2 Financial openness

The MRA for financial openness is presented in Table 4. The format of the table is similar to Table 3. The dependent variable is the partial correlation between financial development and a financial openness measure. Columns (1) and (5) include variables that reflect differences in measurement of financial openness: the share of government-owned banks, capital-account based measures, and FDI based measures (see section 2). All other domestic financial openness measures are then the base. In columns (2) and (6) we add variables that reflect differences in econometric specification. Columns (3) and (7) report the general model with all potential moderator variables included. The Bayesian model averaging results are shown in columns (4) and (8).

Column (4) for private credit suggests that the inclusion of trade openness or inflation in the primary econometric model produces larger financial openness effects. The results also indicate that FDI and capital account-based measures of financial openness produce smaller effects than measures for domestic policy reform. We also find that there is a publication selection bias in this branch of the literature, with preferential reporting of larger effects from financial openness. For stock market capitalization (column 8), neither the alternate measures of financial openness nor other variables considered seem to moderate the reported results.

### 5.2.3 Trade openness

Table 5 presents the MRA for trade openness. There is little difference in how trade openness is measured; it is mainly trade as share of GDP. So, different to financial openness there is more homogeneity in the measure of trade openness used. Still, we control for alternative measures of trade openness (exports and constructed trade measure). The dependent variable is the partial correlation between financial development and trade openness. Columns (1) and (4) include variables that reflect specification differences. Columns (2) and (5) presents the general model with all potential moderators included, while columns (3) and (6) show results from Bayesian model averaging.

The results in column (3) for private credit suggest that using exports as proxy for trade openness results in smaller correlations. Furthermore, our findings indicate that controlling for income results in larger correlations and panel data and controlling for endogeneity gives smaller correlations. Finally, there seems to be a publication bias in favour of findings smaller trade effects. For stock market capitalization we find that controlling for institutions produces larger correlations between trade openness and financial development.

**Table 4.**  
Financial openness and financial development, meta-regression analysis

	PC	PC	PC	PC	SMC	SMC	SMC	SMC
	(1)	(2)	(3)	posterior mean/SD	(5)	(6)	(7)	posterior mean/SD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SESQR	2.198 (0.571)	5.466 (1.540)	19.180** (2.189)	10.204† [2.36]	4.292*** (3.132)	2.359 (1.377)	6.588 (0.752)	3.489 [0.79]
Govt banks	-0.051 (-0.787)	0.023 (0.427)	0.031 (0.573)	0.002 [0.15]	0.182*** (4.174)	0.192** (2.351)	0.072 (0.545)	0.002 [0.04]
Capital account	-0.034 (-0.890)	-0.141** (-2.538)	-0.123** (-2.491)	-0.133† [-5.30]	0.040 (0.820)	0.042 (0.710)	0.046 (0.748)	0.001 [0.09]
FDI	-0.112** (-2.095)	-0.206*** (-3.730)	-0.168*** (-2.883)	-0.196† [-7.81]	0.063 (1.486)	0.028 (0.363)	0.052 (0.732)	0.005 [0.31]
Income		-0.007 (-0.159)	-0.025 (-0.504)	-0.001 [-0.07]		-0.125*** (-3.006)	-0.121* (-1.808)	-0.005 [-0.16]
Trade openness		0.147*** (2.979)	0.139** (2.694)	0.136† [5.47]		0.038 (0.984)	0.074 (1.416)	0.006 [0.30]
Institutions		-0.035 (-1.342)	-0.032 (-1.176)	-0.028† [-1.36]		-0.056 (-0.948)	-0.018 (-0.251)	-0.008 [-0.39]
Inflation		0.074* (1.723)	0.078** (2.085)	0.073† [3.37]		-0.019 (-0.341)	-0.011 (-0.238)	0.002 [0.15]
Remittances/trust		-0.013 (-0.564)	0.047 (1.006)	0.001 [0.05]		0.115** (2.240)	0.074 (0.735)	0.033 [0.37]
Developing			-0.020 (-0.936)	-0.001 [-0.17]			-0.032 (-0.899)	-0.002 [-0.25]
Non-OLS			-0.000 (-0.012)	-0.001 [-0.10]			0.018 (0.280)	-0.008 [-0.40]
Endogenous			-0.035** (-2.300)	-0.005 [-0.42]			0.018 (0.698)	0.005 [0.31]
Averageyear1992			-0.003 (-0.906)	-0.001 [-0.41]			0.003 (0.210)	-0.004 [-0.68]
Panel			0.102 (1.254)	0.049 [0.99]			-0.246 (-1.031)	-0.089 [-0.71]
Focus of study			0.077 (1.603)	0.013 [0.59]			0.310* (1.791)	0.091 (0.82)
Focus of study*SESQR			-11.934 (-1.528)	-3.598 [-0.78]			-6.462 (-1.070)	-0.471 [-0.14]
Constant	0.082** (2.382)	0.001 (0.018)	-0.161 (-1.433)	-0.067† [-1.07]	0.072* (1.778)	0.216** (2.543)	0.096 (0.464)	0.110 [0.89]
Observations	305	305	305	305	110	110	110	110
Number of studies	43	43	43	43	19	19	19	19
Joint bias test			0.057				0.569	
Adjusted R <sup>2</sup>	0.105	0.235	0.283	-	0.053	0.056	0.118	-

*Notes:* The dependent variable is the partial correlation between financial development and a financial liberalization measure. SESQR is the standard error squared. PC and SMC denote private credit and stock market capitalization, respectively. Estimation using unrestricted weighted least squares, using inverse variance weights. *t*-statistics reported in parentheses using standard errors corrected for within-study clustering. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, and 1%, levels, respectively. Columns (4) and (8) report the weighted average of regression coefficients and the posterior Mean/SD ratio in brackets from Bayesian model averaging. † denotes standard error band does not include zero. Joint bias test reports the *p*-value of the statistical significance of both SESQR and Focus of study\* SESQR.



**Table 5.**  
Trade openness and financial development, meta-regression analysis

	PC (1)	PC (2)	PC posterior mean/SD (3)	SMC (4)	SMC (5)	SMC posterior mean/SD (6)
SESQR	5.847** (2.102)	-6.234* (-1.702)	-4.636† [-1.79]	-4.760 (-1.222)	-12.029** (-2.207)	-3.738 [-0.95]
Exports	0.005 (0.183)	-0.039 (-1.324)	-0.033† [-1.78]	-0.063 (-0.951)	0.006 (0.073)	-0.001 [-0.06]
Constructed trade	-0.007 (-0.108)	-0.023 (-0.437)	-0.008 [-0.36]	-0.217*** (-3.667)	-0.192** (-2.620)	-0.177† [-4.28]
Income	0.060 (1.403)	0.059 (1.545)	0.050† [2.08]	-0.038 (-1.114)	0.000 (0.003)	-0.001 [-0.04]
Institutions	0.028 (1.169)	-0.004 (-0.134)	0.001 [0.19]	0.005 (0.075)	0.120* (1.756)	0.061† [0.97]
Financial openness	-0.003 (-0.085)	-0.005 (-0.261)	0.001 [0.03]	0.045 (0.655)	0.057 (0.944)	0.003 [0.18]
Inflation	0.007 (0.164)	-0.017 (-0.503)	-0.002 [-0.30]	-0.077 (-1.280)	0.006 (0.091)	-0.042 [-0.76]
Remittances/trust	-0.051 (-1.595)	-0.022 (-0.852)	-0.013 [-0.80]	0.006 (0.070)	0.071 (0.838)	0.003 [0.07]
Developing		0.005 (0.220)	0.001 [0.06]		0.054 (1.224)	0.024 [0.60]
Non-OLS		-0.008 (-0.532)	-0.001 [-0.11]		0.059 (0.990)	0.079† [1.73]
Endogenous		-0.069** (-2.416)	-0.065† [-5.00]		-0.099 (-1.497)	-0.025 [-0.54]
Averageyear1992		0.001 (0.550)	0.001 [0.18]		-0.007** (-2.182)	-0.001 [-0.37]
Panel		-0.191*** (-2.876)	-0.184† [-5.95]		-0.224 (-1.378)	-0.047 [-0.54]
Focus of study		0.006 (0.173)	0.005 [0.44]		-0.040 (-0.617)	0.001 [0.06]
Focus of study*SESQR		8.646** (2.601)	8.381† [2.43]		7.059 (1.287)	0.278 [0.18]
Constant	-0.007 (-0.114)	0.243*** (2.836)	0.212† [4.97]	0.191* (2.036)	0.227 (0.948)	0.118 [0.95]
Observations	239	239	239	119	119	119
Number of studies	40	40	40	22	22	22
Joint bias test		0.044			0.102	
Adjusted R <sup>2</sup>	0.182	0.352	-	0.247	0.356	-

*Notes:* The dependent variable is the partial correlation between financial development and trade openness. SESQR is the standard error squared. PC and SMC denote private credit and stock market capitalization, respectively. Estimation using unrestricted weighted least squares, using inverse variance weights. *t*-statistics reported in parentheses using standard errors corrected for within-study clustering. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, and 1%, levels, respectively. Columns (3) and (6) report the weighted average of regression coefficients and the posterior Mean/SD ratio in brackets from Bayesian model averaging. † denotes standard error band does not include zero. Joint bias test reports the *p*-value of the statistical significance of both SESQR and Focus of study\* SESQR.

#### 5.2.4 Inflation

Table 6 offers the MRA results for inflation. The dependent variable is the partial correlation between inflation and financial development. For stock market development, estimator matters; compared to OLS, treating inflation endogenous presents smaller adverse effects from inflation. There appears to be no change in the impact of inflation over time. Specification is also important. Controlling for trade and financial openness result in larger inflation effects (models without these variables result in smaller inflation effects, *ceteris paribus*). Samples that use only data from developing and emerging nations produce smaller inflation effects.

A couple of studies explore the impact of inflation thresholds. That is, they explore the impact of inflation on financial development below a certain threshold and above that threshold. Allowing for threshold effects is important; the adverse effect of inflation is worse beyond a threshold rate of inflation. For private credit we find that the way in which inflation is measured matters. In particular, threshold effects are also detected.

We note two qualifications to these findings. First, the threshold result is interesting. However, it comes from only two studies (Boyd *et al.*, 2001 and Khan *et al.*, 2006) and hence requires replication by other studies. Applying meta-analysis to the findings from these two studies suggests a threshold level of just over 6% (6.157). Second, the MRA for inflation and stock market capitalization is based on only 16 studies. As such, the results should also be interpreted with caution.

**Table 6.**  
Inflation and financial development, meta-regression analysis

VARIABLES	PC (1)	PC (2)	PC BMA (3)	SMC (4)	SMC (5)	SMC BMA (6)
SESQR	-7.586** (-2.439)	-5.731 (-1.577)	-7.135† [-3.72]	-6.781*** (-3.313)	3.735 (0.514)	0.625 [0.13]
Income	-0.022 (-0.741)	-0.008 (-0.205)	0.001 [0.02]	0.034 (0.562)	-0.074 (-1.375)	-0.010 [-0.31]
Trade openness	-0.018 (-0.401)	0.013 (0.291)	0.001 [0.05]	-0.076* (-1.917)	-0.061 (-1.390)	-0.048† [-1.44]
Institutions	0.037* (1.797)	0.076 (1.653)	0.054† [2.10]	-0.039 (-1.226)	-0.004 (-0.123)	-0.001 [-0.14]
Financial openness	-0.027 (-0.616)	-0.021 (-0.556)	-0.001 [-0.21]	-0.100 (-1.703)	-0.182*** (-6.605)	-0.132† [-3.07]
Remittances/trust	0.093*** (3.519)	0.075*** (2.927)	0.071† [4.93]	0.018 (0.372)	0.035 (0.545)	0.003 [0.13]
Inflation change	0.099** (2.362)	0.112 (1.667)	0.110† [4.00]	-0.064 (-1.217)	-0.024 (-0.230)	-0.012 [-0.42]
Above threshold	-0.112*** (-4.467)	-0.094* (-1.972)	-0.077† [-1.60]	-0.080 (-1.501)	-0.124*** (-5.849)	-0.104† [-3.17]
Developing only		-0.007 (-0.375)	-0.001 [-0.08]		0.121 (1.461)	0.108† [2.19]
Non-OLS		-0.048* (-1.929)	-0.047† [-3.45]		0.181** (2.214)	0.127† [1.97]
Endogenous		-0.015 (-0.543)	-0.001 [-0.18]		0.175* (1.969)	0.117† [1.69]
Averageyear1992		-0.001 (-0.350)	-0.001 [-0.16]		-0.004 (-0.875)	0.001 [0.10]
Panel		0.072 (0.920)	0.018 [0.52]		0.326** (2.710)	0.029 [0.37]
Focus of study		-0.055 (-1.146)	-0.034† [-1.28]		-0.136 (-1.441)	-0.047† [-1.04]
Focus of study*SESQR		1.247 (0.257)	0.032 [0.03]		7.665 (0.817)	0.159 [0.08]
Constant	-0.069 (-1.394)	-0.148 (-1.467)	-0.105† [-2.67]	0.077** (2.318)	-0.279** (-2.319)	-0.044 [-0.46]
Observations	288	288	288	49	49	49
Number of studies	47	47	47	16	16	16
Joint bias test		0.255			0.392	
Adjusted R <sup>2</sup>	0.234	0.285	-	0.341	0.638	-

*Notes:* The dependent variable is the partial correlation between inflation and financial development. SESQR is the standard error squared. Estimation using unrestricted weighted least squares, using inverse variance weights.  $I^2$  measures the percent of variation in reported estimated that can be attributed to heterogeneity.  $t$ -statistics reported in parentheses using standard errors corrected for within-study clustering. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, and 1%, levels, respectively. Columns (3) and (6) report the weighted average of regression coefficients and the posterior Mean/SD ratio in brackets from Bayesian model averaging. † denotes standard error band does not include zero. Joint bias test reports the  $p$ -value of the statistical significance of both SESQR and Focus of study\* SESQR.

### 5.3 Conditional meta-averages

The MRA coefficients can be used to construct conditional meta-averages. The conditional meta-averages correct for publication selection and econometric misspecification bias, where these are detected as important. We form three sets of meta-averages. First, we construct conditional meta-averages using the Bayesian model averaging posterior means from Tables 3 to 6 above, for those variables with standard error bands that do not include zero. Second, we follow Havránek (2015) and Zigràiova and Havránek (2016) and use the same variables identified through Bayesian model averaging as robust moderator variables, to construct the WLS equivalent specification. We then use the estimated coefficients from these estimations to construct meta-averages.<sup>34</sup> Third, we use the coefficients from general-to-specific models, as is common practice in meta-regression analysis. In most cases, these approaches produce similar conditional averages. The online appendix details the construction of these meta-averages and reports the general-to-specific MRA. Table 7 presents the conditional meta-averages. These estimates are our ‘best practice’ estimates of what this empirical literature has established. Columns (1) and (2) present the results for private credit and columns (3) and (4) for stock market capitalization. We report results for all countries combined in columns (1) and (3), and for samples that include only developing or emerging nations in columns (2) and (4). Table 7 thus provides a summary of what the literature has established with regard to these determinants of financial development.

Institutional quality, and the rule of law in particular, have a robust positive effect on financial development. When samples with all countries are considered, overall institutional quality appears to be more important to stock markets than to private credit, with partial correlations of  $r = 0.16$  and  $r = 0.11$ , respectively; though the confidence intervals overlap suggesting that institutional quality may be equally important. However, for samples with only developing and emerging economies, we find that institutional quality is more important for stock market development;  $0.24 > 0.11$  and the 90% confidence intervals do not overlap. The rule of law is equally important to private credit and stock market development when analyzed samples relate to developing or emerging economies. However, when all countries are analyzed, rule of law is more important for private credit;  $0.25 > 0.16$  and there is little overlap between the 90% confidence intervals. The positive effects of institutional quality are effectively neutralized in countries with French civil law. In nations with French civil law, the

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<sup>34</sup> Havránek (2015) and Zigràiova and Havránek (2016) use the WLS specification to *approximate* confidence intervals around the point estimate derived from posterior means. Our approach centres confidence intervals around the equivalent WLS conditional estimates.

meta-averages suggest that institutional quality has an adverse effect on private credit and no effect on stock market development.

Financial openness has a positive effect on private credit, provided it is measured as domestic openness and not as capital account openness. The effect is much stronger with respect to the liberalization of domestic financial market, which is almost seven times more important to private credit than is capital account liberalization;  $r = 0.11$  compared to  $r = -0.02$ , respectively. For stock market capitalization, capital account openness is equally important as domestic reform.

We find that the case for trade openness has not been established with respect to private credit. Indeed, the meta-average suggests a zero effect;  $r = 0.01$ . However, trade openness appears to be important for stock market capitalization;  $r = 0.18$ . There are 239 estimates relating to the effects of trade openness on private credit from 41 studies. Of these, 161 (65%) report statistically insignificant effects (in either direction); recall Figure 3. While the unconditional meta-average (Table 2) shows a small positive effect, we find, once publication and misspecification bias are considered, little evidence of a genuine empirical effect. To shed further light on this, we look at the interaction between trade openness and financial openness to test the Rajan and Zingales hypothesis that the combination of trade and financial openness drives financial development. To do this, we follow Doucouliagos *et al.* (2019) in conducting a meta-analysis on the interaction effect. The evidence base is also thin here, with only six studies and 29 comparable estimates. Conducting an UWLS meta-analysis on this, we find an interaction partial correlation of 0.040 with a  $p$ -value of 0.586. Hence, we conclude that the evidence does not support the Rajan and Zingales hypothesis.

Inflation has a negative effect on private credit development;  $r = -0.09$ . This adverse effect is larger for stock market capitalization,  $r = -0.15$ , but this is not confirmed for samples that use only data from developing or emerging economics;  $r = -0.05$  but confidence intervals are wide and contain zero. Threshold effects appear to be important, with larger partial correlations.

Comparing across the various dimensions, and focusing on samples with all countries, the meta-analyses suggest that rule of law has the greatest positive impact on private credit development ( $r = 0.25$ ), followed by domestic financial openness ( $r = 0.11$ ) and overall institutional quality ( $r = 0.11$ ). For stock market capitalization, trade openness ( $r = 0.18$ ) has the largest effect, overall institutional quality has a similar effect to the rule of law ( $r = 0.16$ ), followed by financial openness ( $r = 0.11$ ).

**Table 7**  
Conditional meta-averages

	Private credit, all countries (1)	Private credit, developing countries (2)	Stock market capitalization, all countries (3)	Stock market capitalization, developing countries (4)
Institutions:				
- Overall institutional quality	0.111; 0.118 (0.09; 0.15) 0.118 (0.09; 0.15)	0.111; 0.118 (0.09; 0.15) 0.118 (0.09; 0.15)	0.159; 0.155 (0.13; 0.18) 0.170 (0.10; 0.24)	0.242; 0.253 (0.18; 0.32) 0.245 (0.16; 0.33)
- Rule of law	0.247; 0.255 (0.17; 0.33) 0.259 (0.18; 0.34)	0.247; 0.255 (0.17; 0.33) 0.259 (0.18; 0.34)	0.159; 0.155 (0.13; 0.18) 0.170 (0.10; 0.24)	0.242; 0.253 (0.15; 0.34) 0.245 (0.16; 0.33)
- French civil law	-0.045; -0.044 (-0.09; -0.01) -0.042 (-0.08; -0.01)	-0.045; -0.044 (-0.09; -0.01) -0.042 (-0.08; -0.01)	0.024; 0.043 (-0.08; 0.16) -0.019 (-0.14; 0.11)	0.106; 0.141 (-0.01; 0.29) 0.057 (-0.09; 0.20)
Financial openness:				
- domestic	0.114; 0.171 (0.08; 0.27) 0.143 (0.05; 0.24)	0.114; 0.171 (0.08; 0.27) 0.143 (0.05; 0.24)	0.110; 0.133 (0.11; 0.16) 0.137 (0.11; 0.16)	0.110; 0.133 (0.11; 0.16) 0.137 (0.11; 0.16)
- capital account	-0.019; 0.032 (0.01; 0.06) 0.012 (-0.01; 0.03)	-0.019; 0.032 (0.01; 0.06) 0.012 (-0.01; 0.03)	0.110; 0.133 (0.11; 0.16) 0.137 (0.11; 0.16)	0.110; 0.133 (0.11; 0.16) 0.137 (0.11; 0.16)
Trade openness	0.013; 0.004 (-0.02; 0.03) 0.004 (-0.02; 0.03)	0.013; 0.004 (-0.02; 0.03) 0.004 (-0.02; 0.03)	0.179; 0.108 (0.05; 0.16) 0.108 (0.05; 0.16)	0.179; 0.108 (0.05; 0.16) 0.108 (0.05; 0.16)
Inflation	-0.086; -0.070 (-0.12; -0.02) -0.054 (-0.10; -0.01)	-0.086; -0.070 (-0.12; -0.02) -0.054 (-0.10; -0.01)	-0.154; -0.144 (-0.20; -0.09) -0.096 (-0.13; -0.06)	-0.046; -0.026 (-0.12; 0.07) 0.021 (-0.06; 0.10)
Inflation, threshold	-0.163; -0.159 (-0.24; -0.08) -0.163 (-0.22; -0.11)	-0.163; -0.159 (-0.24; -0.08) -0.163 (-0.22; -0.11)	-0.258; -0.249 (-0.31; -0.18) -0.207 (-0.25; -0.17)	-0.150; -0.132 (-0.24; -0.02) -0.09 (-0.17; -0.01)

*Notes:* Table reports three sets of conditional meta-averages. The first row reports meta-averages using: (1) Bayesian model averaging posterior means for variables in Tables 3-6 with standard error bands that do not include zero; and (2) the coefficients from a WLS model that includes only those variables identified through Bayesian model averaging as robust moderator variables. The second row uses coefficients from general-to-specific MRA models. See the online appendix for details on the construction of these conditional meta-averages. Figures in parentheses are 90% confidence intervals.

## 6. Conclusions

Our results based on 1900 estimates suggest that institutional quality is positively correlated to both private sector credit and stock market capitalization (both as share of GDP). In nations with French civil law, institutional quality has no effect on financial development. Domestic financial openness has a positive effect on private credit and stock market development, while trade openness appears only to be important for stock market development. Inflation has an adverse effect on both proxies for financial development, but its effect is larger for stock market development. Finally, we conclude that the literature has not yet robustly established that remittances and trust matter for financial development.

Comparing across the various dimensions, and focusing on samples with all countries, the meta-analyses suggest that rule of law has the greatest positive impact on private credit development, followed by domestic financial openness, and overall institutional quality. For stock market capitalization, trade openness has the largest effect, followed by overall institutional quality and the rule of law, and financial openness.

There is some evidence of spatial differences, with the effects of institutions being larger in stock market capitalization in developing and emerging economies. Inflation has weaker effects on stock market capitalization in developing and emerging economies. Interestingly, we do not find evidence suggesting that the effects of the variables considered changes over time.

Are these correlations of practical as well as statistical significance? According to Cohen's (1988) guidelines for zero-order correlations, 0.10 is a small effect and 0.30 is moderate. Doucouliagos (2011) presents guidelines for partial correlations: a partial correlation is small if less than 0.07, 0.17 is moderate, and 0.33 is large. This suggests that institutions have a moderate to large effect and inflation and financial openness have small to moderate effects.<sup>35</sup>

We also detect evidence of publication selection bias. For stock market development, this is detected in the case of institutions, where there is preferential reporting of larger positive correlations. In the case of private credit, there is preference to report larger positive correlations for financial openness, smaller correlations for trade openness and larger negative inflation correlations. We also detect differences between studies that focus on these factors

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<sup>35</sup> Schmidt and Hunter (2015) demonstrate that even small correlations can signal large policy effects.

and all other studies. Authors focussed on the effects of institutions or trade openness tend to preferentially report larger positive correlations, whereas other studies tend to report smaller correlations.

Our analysis suggests that the evidence base for some of the hypothesized effects is rather thin. This holds, for instance, for remittances and trust. Further analyses may increase the evidence base so that it becomes clear whether the limited number of studies examining the effect of these drivers or the absence of a genuine impact is causing our findings. Furthermore, there are some potential drivers that have been examined by one or two studies only. This holds, for instance, for government debt. According to Hauner (2009), two views can be distinguished. First, public debt may contribute to financial development by providing a relatively safe asset. Second, developing banking sectors holding large public debt may progress more slowly, because banks that mainly lend to the public sector could become too complacent to have the drive to develop the banking market under the difficult conditions in developing countries. The results of Hauner (2009) are overall more favorable to the second view, but there is some support for the “safe asset” view for limited shares of public sector credit. In view of the rising government indebtedness, further research on the role of government debt in financial development is warranted.



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**On line material**

**Online Appendix**

**What Drives Financial Development? A Meta-Regression Analysis**

Chris Doucouliagos, Jakob de Haan and Jan-Egbert Sturm



**Table A1.** Studies considered and drivers of financial development

(Studies not included in the MRA are in bold)

Study:	FD:	Variable of main interest:	Controls:
La Porta <i>et al.</i> (1997) <sup>d</sup>	Stock market (SMC; no. of domestic listed firms; IPOs) /Debt (bank debt plus non-financial debt/GDP)	Shareholder protection (+); rule of law (ICRG; +); French legal origin (-)	Initial GDP (NS); GDP growth (+)
Levine (1998)	Banking (PC)	Creditor rights (+); Rule of law/contract enforcement (ICRG; +); German legal origin (+)	Initial GDP per capita (+/NS)
Levine (1999)	Banking (LLY; PC; Bank credit divided by bank credit plus central bank domestic assets; private credit/total credit)	Institutional quality (ICRG contract enforcement; +); Creditor rights (+) <sup>36</sup>	GDP per capita (+); Accounting standards (+/NS)
De Gregorio (1999)	Banking (PC)/Stock market (SMC; SMTV)	Financial openness (CF; others; +)	Initial GDP per capita (NA); Inflation (NA); Trade openness (EI; NA)
Garcia and Lu (1999)	Stock market (SMC)	Macro-economic factors	GDP (+), Saving/Investment (+); Domestic credit/Liq. Liabilities (+); Stock value traded (+); Inflation (NS)
Levine <i>et al.</i> (2000)	Banking (LLY; PC; and (bank assets/bank+CB assets)	French legal origin (-/NS); Creditor rights (+); Quality of legal institutions (ICRG; +)	Initial GDP per capita (+); Accounting standards (+)
Pistor <i>et al.</i> (2000)	Stock market (SMC)/Banking (PC)	Rule of law (Other; +); Legal rights (NS)	Transition specific controls
Perotti and van Oijen (2001)	Stock market (SMC; SMTV)	Institutional quality (Inst. Investor; ICRG; +)	Growth GDP per capita (NS); Growth exports per capita (+); Real depreciation (-); Privatization proceeds (NS)
Boyd <i>et al.</i> (2001)	Stock market (SMC; SMTV)/Banking (PC; LLY; Bank assets/GDP)	Inflation (-)	GDP per capita (+/NS); Education (+/NS); Political Instability (NS); Black market premium (NS); Government expenditure (NS)
La Porta <i>et al.</i> (2002)	Stock market (SMC)/Banking (PC; LLY; Bank assets/Bank assets + CB assets)	Government ownership of banks (-)	Initial level of FD (-); Initial GDP per capita (-)
Japelli and Pagano (2002)	Banking (PC)	Credit registers (+)	Initial level of GDP (+); GDP growth (NS); French legal origin (NS); Rule of law (La Porta <i>et al.</i> ; +); Creditor rights (La Porta <i>et al.</i> ; +)
<b>Cull <i>et al.</i> (2002)<sup>37</sup></b>	Banking (M2/GDP; LLY)	Deposit insurance (-)	GDP per capita (+/NS); Inflation (-); Growth (+/NS)
Calderón <i>et al.</i> (2002)	Banking (LLY; PC; Bank assets/GDP; Credit/GDP)	Trust (+)	GDP (+); Education (NS); Rule of Law (+); Rule of Law*Trust (NS); French legal origin (-/NS); Inflation (NS/-)
Beck <i>et al.</i> (2003a)	Stock market (SMC)/Banking (PC)	French legal origin (-); Settler mortality rate (-)	Ethnic diversity (NS); Religious composition (NS); Years of independence (NS); Continental dummies (NS)

<sup>36</sup> Creditor rights, enforcement and accounting standards are also instrumented by legal tradition.<sup>37</sup> Study excluded because its estimates could not be made comparable to the other studies.

Stulz and Williamson (2003)	Stock market (SMC/Equity/GDP)/Banking (PC; long-term debt/GDP)	Culture (NS/-)	GNP per capita (+); Trade openness (FR; NS); Civil law (-)
Galindo and Micco (2004)	Banking (PC)	Creditor rights (La Porta <i>et al.</i> ; +); Rule of law (+); Institutional quality (+)	GDP per capita (NS); GDP (NS); Inflation (-); Budget deficit (+); French legal origin (-)
Garretsen <i>et al.</i> (2004)	Stock market (SMC)/Banking (PC)	Societal norms (+/NS)	Indicators grounded in legal origin (+/NS); initial GDP (NS/+); GDP growth (+); Creditor/investor rights (+/NS)
Do and Levchenko (2004)	Banking (PC)	Trade openness (EI; FR; - in LDCs but + in advanced countries)	Initial FD (-); GDP per capita (NS); Secondary schooling (+); Legal origin (NS)
Huang and Temple (2005)	Stock market /Banking (PCA-based measures)	Trade openness (EI; FR; +)	GDP per capita (NA); Legal origin dummies (NA)
Acemoglu and Johnson (2005)	Banking (PC)/Stock market (SMC)	Institutional quality (Polity; constrains on CE; +); Legal formalism (NS/+)	--
El-Wassal (2005)	Stock market (SMC; SMTV)	--	GDP growth (+); Trade Turnover (+); Financial openness (FDI; +; portfolio investments; +); Trade openness (EI; +); Institutional quality (ICRG; NS)
Cull <i>et al.</i> (2005)	Banking (LLY; PC)	Deposit insurance (-)	Inflation (NS); GDP growth (NS); Supervision; Supervision*Insurance (+); Rule of Law (ICRG; NS)
Detragiache <i>et al.</i> (2005)	Banking (PC)	French legal origin (NS); political instability (ICRG; -); corruption (ICRG; -); inflation (-); remittances (NS)	GDP per capita (+); transition dummy (-); rural population (-)
Chinn and Ito (2006)	Banking (PC)/Stock market (SMC; SMTV, SMT0)	Financial openness (CI; +)	Trade openness (EI; NS), Inflation (NS); GDP per capita (NS); Institutional Quality; Interaction between IQ and CI (+)
Ito (2006)	Banking (PC)/Stock market (SMC; SMTV)	Financial openness (CI; +)	Trade openness (EI; NS), Inflation (NS); GDP per capita (NS); Institutional Quality (NS; Interaction between IQ and CI (+)
Law and Demetriades (2006)	Banking (PC; LLY; DC)/Stock market (SMC; SMTV)	Trade openness (IE; import duties; +); Financial openness (CF; CI; +); Interaction TO and FO (+); Institutional quality (ICRG; +)	GDP per capita (+)
Khan <i>et al.</i> (2006)	Banking (PC)/Stock market (SMC)	Inflation (-)	GDP per capita (+); Trade openness (EI; +); Public consumption (-)
Claessens <i>et al.</i> (2006)	Stock market (SMC; SMTV; Capital raised)	--	GDP per capita (+); English legal origin (+/NS); Inflation (NS); Budget deficit (-); Financial openness (CF (and others); +/NS); Stock market liberalization (+); Global growth opportunities index (+); Institutional quality (ICRG Law and order; NS) <sup>d</sup>
Keefer (2007)	Banking (PC)	Political factors (DPI: Checks and balances; electoral competitiveness; duration of competitive elections; newspaper circulation; +)	Land (NS); Population (NS); GDP per capita (+/NS); Legal origin (NS)

Ben Naceur <i>et al.</i> (2007)	Stock market (SMC)	--	GDP (NS); Saving rate (+); Investment rate (NS); Private credit/M3 (+); Stock market liquidity (+); delta Inflation (NS)
McNulty <i>et al.</i> (2007)	Banking (LLY; PC; Bank assets per capita; Credit/GDP)	Institutional quality (ICRG: rule of law; + (for PC and credit)/NS (for other measures)	GDP per capita (+); GDP (NS); Inflation (+); GDP growth (-); Economic structure (-); Illiteracy (-); Population distribution (-); Muslim (+)
Djankov <i>et al.</i> (2007)	Banking (PC)	Creditor rights (+); Credit registers (+)	GDP (+); GDP growth (+); Contract enforcement (+); Inflation (-); Creditor rights (+); Information sharing (+); Credit bureau/registry (+); French legal origin (NS)
Li (2007)	Stock market	Institutional quality (EF; +) <sup>d</sup>	Frontier: GDP growth (+); GDP per capita (NS); Inflation (NS); Private credit to GDP (+); Government consumption (NS); Trade openness (EI; +); Correlation with MCSI (NS)  Efficiency: French legal origin (-); Law and order (ICRG; +); Insider trading (+); Shareholder rights (+); Accounting standards (+); Credit ratings (NS)
Do and Levchenko (2007)	Banking (PC; LLY)/Stock market (SMC, SMTO; SMTV)	External finance need of exports (+)	Trade openness (EI; NS/-); GDP per capita (+); Legal origin (NS)
Dehesa <i>et al.</i> (2007)	Banking (PC)	Inflation (-); Creditor rights (WBD; +)	Credit Information (WBD; +/NS); GDP per capita (+); Variability XR (NS); Creditor rights*Inflation (-)
McDonald and Schumacher (2007)	Banking (PC)	Institutional quality: Creditor rights (WBD; +); Credit information (WBD; +); Rule of law (ICRG); +)	GDP per capita growth (-); Inflation (-); Budget Deficit (NS); Financial liberalization (Other; +); French legal origin (-)
Law (2007)	Stock market (SMC)/ Banking (PC)	Financial Openness (Capital Flows; +); Trade openness; IE; +)	GDP per capita (+); Institutional quality (ICRG; +); TO*FO (+/NS)
Khody and Sohrabian (2008)	Banking (PC; LLY; DC)	Financial Openness (FDI; +/NS)	GDP per capita (+/NS)
Herger <i>et al.</i> (2008)	Stock market (SMC; SMTV)/ Banking (PC)	Institutional quality (Legal formalism; NS and Polity constraints; +); Trade openness (EI; +); Culture (Religion; NS)	
Tressel and Detragiache (2008)	Banking (PC)	Financial openness (ABD; +)	Inflation (-); GDP per capita (+); IQ (Polity; EF; ICRG; creditor rights; +) <sup>38</sup>
Detragiache <i>et al.</i> (2008)	Banking (PC)	Financial openness (Presence of foreign banks; -)	GDP per capita (+); Transition (-); Inflation (-); Institutional quality (Creditor information; Lack of corruption; Enforcement speed; +)
Martínez Pería <i>et al.</i> (2008)	Banking (PC; Deposits/GDP)	Remittances (+)	GDP (+), GDP per capita (+), Inflation (-/NS), Financial Openness: Dual X-rate (NS) and Capital inflows (NS); Trade Openness (E; NS)

<sup>38</sup> The authors do not use interaction effects but split the sample in above and below median for these variables; only property rights (EF) is significant

Harper and McNulty (2008)	Banking (PC)	Rule of law (+); French legal origin (-)	Russian legal origin (-); Islam (-); Former SU (-); Transition (-); Initial GDP (NS); Inflation (NS); Agriculture (NS); Rural (NS); Literacy (NS); Population (NS)
Kim and Wu (2008)	Stock market (SMC; SMTV; SMTO)/Banking (PC; DC)	Credit ratings (NS; +)	Lag FD (+); GDP growth (NS); S&P index (NS); Inflation (NS); Interest spread (NS); Liquid reserves (NS); Institutional quality (WB; NS/+)
Klein and Olivei (2008)	Banking (LLY; PC)	Financial openness (Other; +)	Initial level FD (+); Trade openness (EI; +/NS); Regional dummies (-); Oil-producing nations (-); French legal (NS); Inflation (NS/-); GDP growth (+); Initial GDP (+/NS); Institutional quality (ICRG, but only interacted with FO)
Girma and Shortland (2008)	Stock market (SMC; SMTV)/ Banking (PC)	Democracy (+); Regime Stability (+)	GDP growth (+/NS); Trade openness (FR; NS); French legal origin (-); Banking crises (-) <sup>39</sup>
Ben Naceur <i>et al.</i> (2008)	Stock market (SMC; SMTO)	Stock market liberalization (+)	Inflation (NS); PC (+/NS); Trade Openness (EI; +); GDP per capita (+); Savings (+)
Cull and Efron (2008)	Banking (LLY; PC)	World Bank loans (+/NS)	Institutional quality (Other; NS); GDP growth (+); Inflation (NS); Lagged M2/GDP (+)
Calderón and Kubota (2009)	Stock market (SMC)/Banking (PC)	Financial openness (LM; +)	GDP per capita (+); Inflation (-); Trade openness (EI; NS); Exchange rate regime (-); Institutional quality (ICRG); Investor protection (IQ and investor protection only used in interaction with FO)
<b>Gries <i>et al.</i> (2009)<sup>40</sup></b>	Banking (PCA-based measure; LLY)	Trade openness (EI; NS)	GDP growth (NA)
Gupta <i>et al.</i> (2009)	Banking (PC; deposits/GDP)	Remittances (+)	GDP per capita (+); Log of GDP (NS); Inflation (NS); Financial openness: Dual X-rate (-); Sum of: FDI and Aid (NS); Trade openness (EI; +) <sup>41</sup>
Baltagi <i>et al.</i> (2009)	Stock market (SMC)/Banking (PC)	Trade (EI; +) and financial openness (CI; LM; ABD; +)	GDP per capita (+); Institutional Quality (ICRG; +/NS) <sup>42</sup>
Singh <i>et al.</i> (2009)	Banking (PC)	Institutional quality (Property rights (EF); WB; ICRG; +)	GDP per capita (+); Inflation (-); Financial liberalization (Other; +); Information sharing (+); CFA dummy (NS)
Billmeier and Massa (2009)	Stock market (SMC)	Institutional Quality (EF; +); Remittances (+)	GDP (+); Investment (+); Domestic Credit (NS); Oil Price (+); US Fed Funds Rate (NS); □ Inflation (NS); Stocks Traded (+)
Hauner (2009)	Banking (PC, LLY, DC)	Government debt (-)	GDP per capita (NS); Inflation (-/NS); Trade openness (EF (restrictions on trade from HF)); NS); Institutional quality (EF; NS); Cost of enforcement (-); Credit information (NS); Banking crises (+); DGS (-); French legal origin (NS)
Law (2009)	Banking (PC, LLY, DC)/Total	Trade openness (EI; +); Financial openness (capital flows; +/NS)	GDP per capita (+); IQ (ICRG; +); Interaction TO and FO (+/NS)
De Bonis and Stacchini (2009)	Banking (PC)	Government debt (-)	Reserve requirements (NS); German legal tradition (+); Creditor rights (NS/+); Stock market capitalization (+); GDP per capita

<sup>39</sup> These scores are based on their table 5.

<sup>40</sup> Study excluded because its estimates could not be made comparable to the other studies.

<sup>41</sup> These scores are based on their table 3.

<sup>42</sup> In LDCs and total sample significant and positive for PC not for SCM.

			(+); Inflation (NS); Inflation variability (NS); Trade openness (EI; NS)
Law and Habibullah (2009)	Stock market (SMC)/Banking (PC)	Institutional quality (ICRG; +); Trade openness (EI; +/NS); Financial openness (other; NS/+)	GDP per capita (+);
Andrianaivo and Yartey (2010) <sup>e</sup>	Stock market (SMC)/Banking (PC)	--	GDP per capita (+); Reserve requirements (-); Trade openness (EI; +); Creditor rights (+); Institutional quality (ICRG; +); Inflation (-); Financial openness (CI; -); TO*FO (+)
Huang (2010)	Banking (PCA on PC; LLY; bank assets/bank+CB assets)	Institutional Quality (Polity; +)	GDP (+); Trade Openness (EI; +); Investment (+); Black Market Premium (-)
Kablan (2010)	Banking (PC)	--	Foreign bank deposits (-); GDP per capita (NS); Inflation (-); Concentration (-); English legal origin (-); Institutional quality (ICRG; NS)
Hanh (2010)	Banking (PC; LLY)	Trade openness (EI; +/-); Financial openness (FDI; Capital flows; +/-NS)	FDI (NS/+); Capital flows (NS/+); Institutional quality (ICRG; +); GDP growth (+); GDP per capita (+)
Adarov and Tchaidze (2011)	Stock market (SMTV)/Banking (PC)	--	Institutional quality (WB; +); GDP per capita (+/NS); Trade openness (EI; +/NS); Inflation (-); Inflation volatility (NS); Bond market capitalization (NS); Financial openness (IIP; +)
Cooray (2011)	Banking sector (PC; bank assets/GDP)	Institutional quality (WB; +/-); French/German legal origin (-/+); Government size: bank ownership and spending (NS)	Investment (NS); Schooling (+); Religious fractionalization (-/NS); French colony dummy (NS); Latitude (NS)
Aggarwal <i>et al.</i> (2011)	Banking (PC; deposits/GDP)	Remittances (+)	GDP per capita (+); Log of GDP (+); Inflation (-); Financial/trade openness: Dual X-rate (-/NS); FDI inflows (+/NS); Aid (NS); Trade openness (E; NS) <sup>43</sup>
Roe and Siegel (2011)	Stock market (SMTV)/Banking (PC; Bank credit/GDP)	Political instability (-)	GDP per capita (+/NS); Trade openness (FR; -/NS); French legal origin: (-/NS)
Kim <i>et al.</i> (2011)	Stock market (SMTV)/Banking (PC)	Trade openness (EI; -)	GDP per capita (+); Schooling (NS); Real interest rate (-); Inflation (-); Government spending (+); Black market premium (+); Investment (+); Terms of trade (-); Population (+)
Allen <i>et al.</i> (2012)	Banking (PC; LLY)	--	Population (NS); Population density (+/NS); Natural resources (-); GDP per capita (+); GDP growth (-); Inflation (-); Current account (+); Institutional quality (WB; +); Manufacturing (NS); Schooling (NS)
Luca and Spatafora (2012)	Banking (PC)	Financial openness (Capital flows; NS)	Cost of Capital (-/NS); Institutional Quality (WB; +); Trade openness (E; +/NS); Government Budget Balance (+/NS); Inflation (-/NS)
Cooray (2012)	Banking sector (PC; LLY; bank assets/GDP)	Remittances (+)	GDP per capita (+); Trade openness (E; +); FDI (+/NS); Inflation (-/NS); Fixed X-rate

<sup>43</sup> Results based on their table 6.

			regime (-); Interaction of remittances with government ownership of banks (-) <sup>44</sup>
Becerra et al. (2012)	Banking (PC)	Credit dependence (NS/-); Institutional quality (ICRG; bureaucratic quality; NS); Interaction: (+)	GDP per capita (+); Trade openness (EI; NS); Financial openness (LM; NS/+); Legal origin (French; NS; German +; Scandinavian; -)
Law and Azman-Saini (2012)	Stock market (SMC)/Banking (PC)	Institutional quality (ICRG; WB; +)	Financial openness (LM; -/NS); Trade openness (EI; NS); GDP per capita (+)
Ahmed (2013)	Banking sector (PC; LLY; DC)	Financial openness (CI; PCA-based measures; +)	Trade openness (EI; -); Capital inflows (+); Inflation (-); Government consumption (-); Secondary school enrolment (+); Institutional quality (EF; +); Population (+/NS)
Brown et al. (2013)	Banking sector (PC)	Remittances (-/NS/+)	GDP per capita (+); Inflation (NS); Financial openness (CI; +/NS); Trade openness (EI; +/NS); German legal origin (+) <sup>45</sup>
Barajas et al. (2013)	Banking (PC)	--	Inflation (-); Remittances (+); GDP growth (+); Institutional quality (ICRG; NS); Creditor rights (+); Flexible X-rate (-); Capital Inflows (-); Banking crisis (NS) <sup>46</sup>
Law and Ibrahim (2013)	Stock market (SMC; SMTO)/Banking (PC; DC)	Trust (+/NS)	Institutional quality (+/NS; ICRG); GDP per capita (+); Trade openness (IE; NS); Financial openness (LF; NS); British legal origin (+)
de la Torre et al. (2013)	Stock market (SMC; SMTO)/Banking (PC)	--	Initial GDP per capita (+); GDP per capita (+); Population (+); Country characteristics (+/-); Credit crash (-); Creditor rights (+); Creditor information (-/+); Investor protection (+/NS); Enforcement costs (NS/-); Banking crises (-)
Claessens and van Horen (2014)	Banking (PC)	Financial openness (Foreign bank presence; -)	GDP per capita (+); Inflation (-); Institutional Quality (Creditor information; Cost of enforcing; WBD; +/NS)
David et al. (2014)	Banking (FA-based measure; PC)	Trade openness (EI; NS/+) and Financial openness (CI; NS)	Inflation (-); GDP per capita (+); Constraints on executive (Polity; NS); Terms of trade (NS); Population density (NS)
Bhattacharyya and Hodler (2014)	Banking (PC)	Natural resources (-); Institutional quality (Polity; +)	NR*IQ (+); GDP per capita (+); Investment (+); Aid (NS); Financial Openness (FDI; NS); Trade openness (IE; NS); Schooling (NS); Income inequality (NS); Terms of trade (NS); REEXR (NS); Financial openness (CI; NS); Real interest rate (NS)
<b>Shahzad et al. (2014)<sup>47</sup></b>	Entire sector (PCA on 8 indicators)	Remittances (+)	GDP per capita (+); Financial Openness (FDI; +); Trade openness (E; -); Inflation (-)

<sup>44</sup> Results based on their table 5.

<sup>45</sup> Study does not report t or p values; results based on their table 2 (except for + in remittances that refers to advanced economies sample).

<sup>46</sup> Results based on their table 2.

<sup>47</sup> Study excluded because the dependent variable is a construct of 8 measures of financial development and hence not comparable with the other studies.

Soumaré and Tchana Tchana (2015)	Banking sector (PC; LLY; bank assets/GDP)/ Stock market (SMTV; SMTO)	Financial Openness (FDI; +/-NS)	Inflation (NS); GDP (+); X-rate (NS); Current account (-; NS); Interest rate (NS); Schooling (NS); Institutional Quality (WB; NS)
Ayadi <i>et al.</i> (2015)	Banking (PC)/Stock market (SMTV)	--	GDP per capita (+); Trade openness (EI; +/-NS); Financial openness (CI; +); Inflation (-/+); Savings (-); Institutional quality (ICRG; +)
<b>Coulibaly (2015)<sup>48</sup></b>	Banking (PC; LLY)	Remittances (NS)	GDP per capita (NA)
Mbulawa (2015)	Banking (PC)	Institutional quality (ICRG; +)	Economic growth (+); Trade openness (EI; NS); Inflation (NS); Interest rate (+); Remittances (NS); Capital formation (+); Credit to public sector (+); Financial openness (FDI; NS); Savings (-)
Almarzoqi <i>et al.</i> (2015)	Banking (PC)	--	Growth (+); Inflation (NS); Remittances (NS); Trade openness (Imports/GDP; +); Financial openness (IC; NS); Institutional quality (ICRG; +); Polity (NS); Banking crises (-) <sup>49</sup>
Khalifaoui (2015)	Banking (PC)	--	NPLs (-); M2/GDP (+); Equity/Assets (NS); Inflation (- (in LDCs)/NS); Stock market capitalization (+); Current account (-); Creditor rights (+ (only in adv. Economies)/NS); Credit information (NS/+); Investment (+); Trade openness (EI; - (for LDCs)/+ (for adv. economies); Schooling (+)
Le <i>et al.</i> (2016)	Banking (PCA on PC; LLY; bank assets/bank+CB assets)	Institutional Quality (WB; +/-NS for adv. economies), Trade openness (+/NS for LDC)	GDP per capita (+/NS)
Karikari <i>et al.</i> (2016)	Banking (PC; LLY; Bank deposits/GDP)	Remittances (-/+)	GDP (+); GDP per capita (+); Inflation (-); Trade openness (E; NS); Financial openness (FDI; NS)
Gopalan (2016)	Banking (PC)	Financial openness (Presence foreign banks; +) <sup>50</sup>	GDP per capita (+); Inflation (NS); X-rate regime (NS); Public debt (-); Credit information (WBD; +); Institutional Quality (Rights of creditors; WB; +)
Fauzel (2016)	Banking (PC)	Financial openness (FDI; +)	GDP per capita (+); Human capital (+); Trade openness (EI; +); Investment (NS); Interest Rate (-); Inflation (-)
Ng <i>et al.</i> (2016)	Stock market (SMC; SMTV; SMTO)	Trust (+)	Institutional quality (ICRG, EF, WB: +) <sup>b</sup>
Fromentin (2017)	Banking (PC; LLY)	Remittances (+)	GDP per capita (+); Inflation (-); Trade openness (E; NS);
Trabelsi and Cherif (2017)	Banking (PC; LLY)	Financial openness (CI; +/-NS)	Trade openness (EI; NS); Initial FD (+); Inflation (NS); Banking crises (NS); Currency crises (NS); Institutional quality (ICRG; +/-NS)
Levine <i>et al.</i> (2017)	Banking (PC; Bank deposits/GDP)	Slave exports (-)	French legal origin (NS); Latitude (+); Independence (+/NS); GDP per capita (+); GDP growth (NS); Settler mortality (NS)

<sup>48</sup> Study excluded because its estimates could not be made comparable to the other studies.

<sup>49</sup> Based on their table 5b.

<sup>50</sup> Scoring based on Table 3; full sample.

Fromentin (2018)	Banking (PC; LLY)	Remittances (+)	GDP per capita (+); Value added industry (NS); Trade openness (E; -); Inflation (-); FDI (+/NS); Aid (NS); Saving (+/-)
<b>Sahin (2018)</b> <sup>51</sup>	Banking sector (DC; LLY)/ Stock market (SMTV; SMTO)	Financial Openness (FDI; NS)	Trade Openness (IE; NS)

<sup>a</sup> Signs have been changed as study examines drivers of the gap between benchmark and actual FD. <sup>b</sup>PIP exceeds 0.50. <sup>c</sup> Results refer to banking sector. <sup>d</sup> Results refer to market capitalization. + means significant and positive; - means significant and negative; NS means non-significant or non-robust; NA means not available

SMC: Stock market capitalization/GDP; SMTO: Stock market turnover; SMTV: Stock market total value/GDP; PC: private credit/GDP; LLY: Liquid liabilities/GDP; DC: Domestic credit/GDP

Financial openness: CI: Chin-Ito index; LM: Lane and Milesi-Ferretti; CF: capital flows; ADT: financial reform data of Abiad et al. (2008)

Trade openness: EI: Export plus Import/GDP; E: Export to GDP; FR: Openness measure of Frankel and Romer

Institutional quality: ICRG; WB (Governance Indicators); WBD (Doing Business)

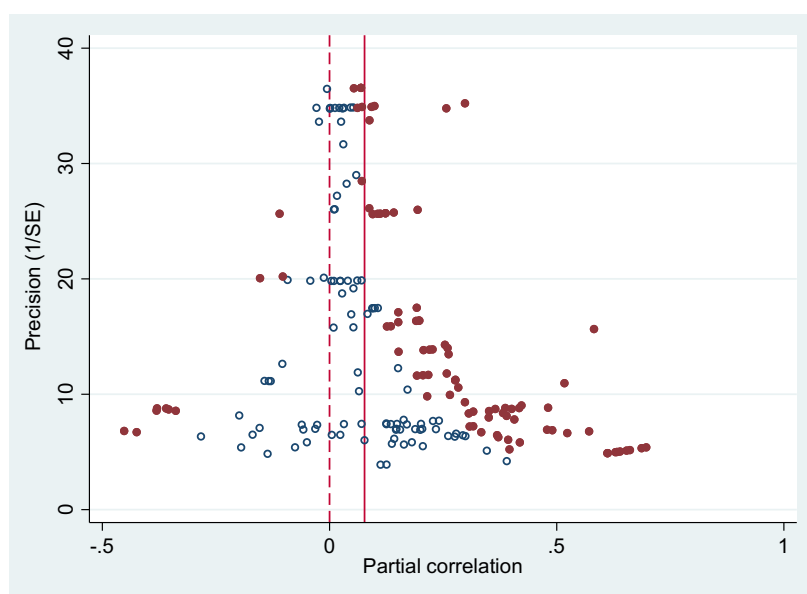
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<sup>51</sup> Study excluded because its estimates could not be made comparable to the other studies.



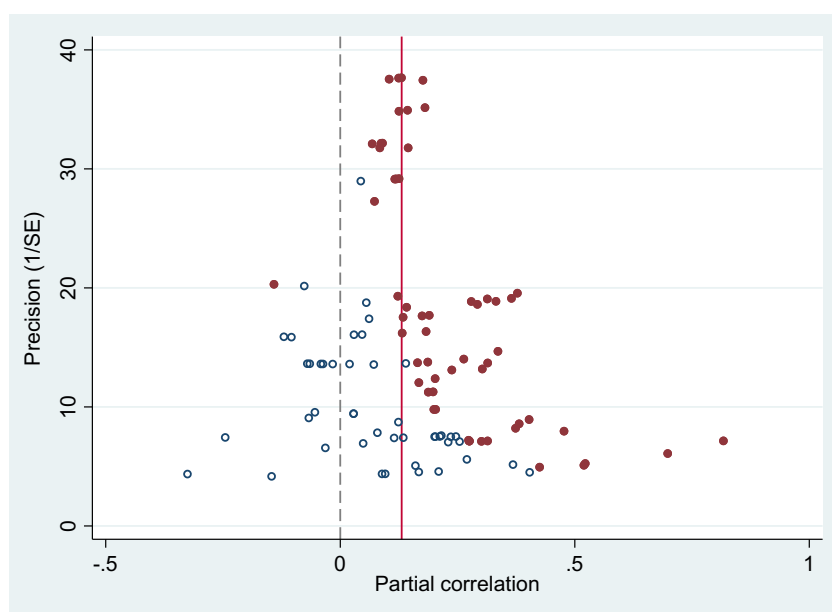
## A1. Funnel plots

The following are funnel plots for stock market capitalization.



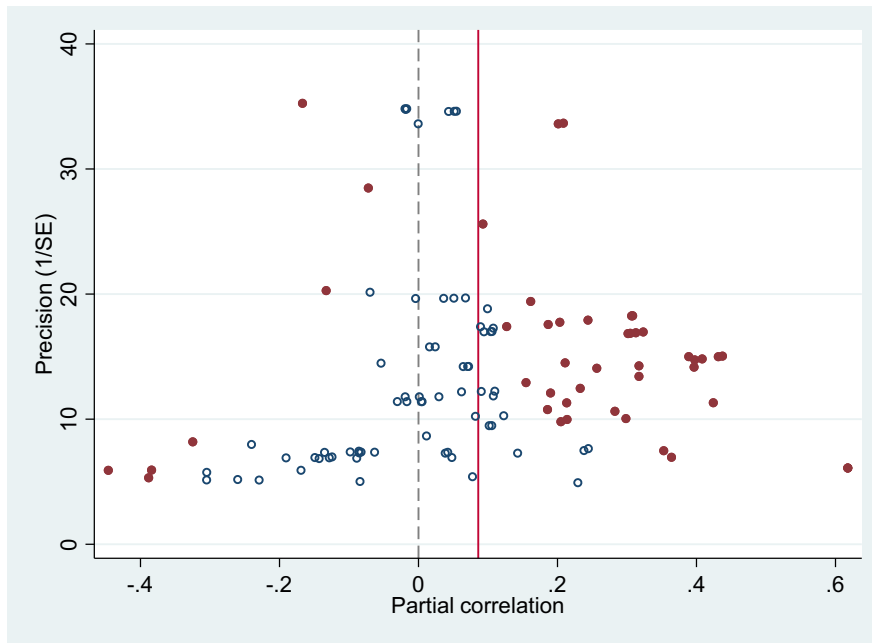
**Figure A1.** Institutions and Stock Market Capitalization

*Note:* 184 estimates. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = 0.077$ ). The dotted line indicates a zero correlation.



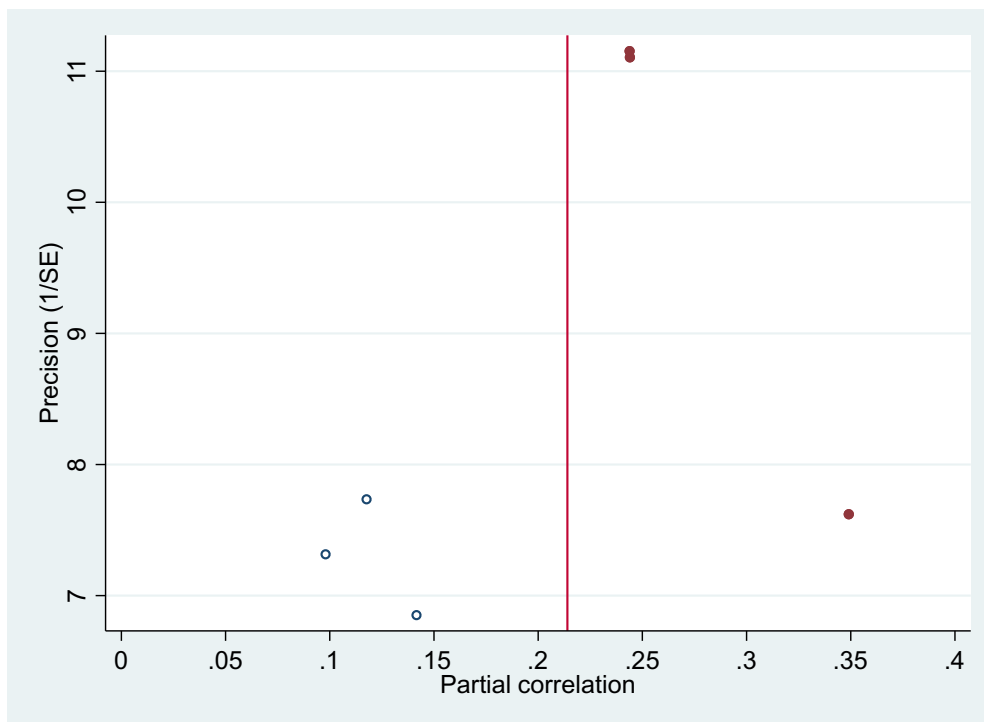
**Figure A2.** Financial Openness and Stock Market Capitalization

*Note:* 102 estimates included. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = 0.13$ ). The dotted line indicates a zero correlation.



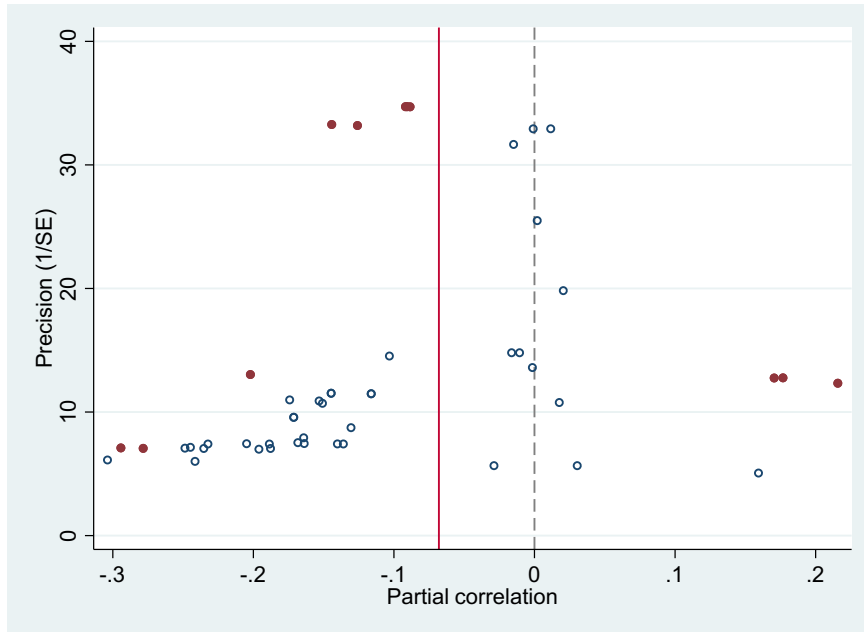
**Figure A3.** Trade Openness and Stock Market Capitalization

*Note:* 112 estimates included. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = 0.09$ ). The dotted line indicates a zero correlation.



**Figure A4.** Remittances and Stock Market Capitalization

*Notes:* 6 estimates. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = 0.21$ ).



**Figure A5. Inflation and Stock Market Capitalization**

Notes: 49 estimates. Hollow circles are statistically insignificant correlations. Full circles are statistically significant. The solid line indicates the weighted average correlation ( $r = -0.07$ ). The dotted line indicates a zero correlation.

Tables A2 and A3 repeat tables 1 and 2 from the text, replacing inverse variance weights with sample size weights. The coefficients are slightly different in most cases but inferences are identical.

**Table A2.**

Institutions and financial development, unconditional meta-averages, sample size weights

	All estimates (1)	Creditor protection (2)	French law (3)	Overall institutional quality (4)	Rule of law (5)	Governance (6)	Democracy (7)	Economic freedom (8)
<i>A. Private credit</i>								
UWLS	0.070 (0.001)	0.116 (0.001)	-0.037 (0.047)	0.118 (0.001)	0.293 (0.001)	0.115 (0.008)	0.034 (0.055)	0.201 (0.078)
N [k]	500 [62]	95 [22]	82 [22]	94 [21]	34 [13]	54 [15]	78 [11]	20 [4]
<i>B. Stock market capitalization</i>								
UWLS	0.078 (0.000)	0.083 (0.046)	-0.033 (0.442)	0.127 (0.001)	0.055 (0.128)	0.062 (0.135)	0.087 (0.002)	0.188 (0.200)
N [k]	195 [28]	16 [6]	24 [8]	49 [11]	24 [6]	27 (8)	38 (5)	5 [2]

Notes: Each cell reports a separate regression. The dependent variable is the partial correlation between financial development and one of the nine measures of institutions proposed in the literature. Panels A and B present results for private credit and stock market capitalization, respectively. UWLS denotes unrestricted weighted least squares. N and k denote the number of estimates and the number of studies, respectively. All models estimated with weighted least squares using sample size weights.  $p$ -values reported in parentheses using standard errors corrected for within-study clustering.

**Table A3.**

Other determinants of financial development, unconditional meta-averages, sample size weights

	Openness		Remittances (3)	Trust (4)	Inflation (5)
	Financial openness (1)	Trade openness (2)			
<i>A. Private credit</i>					
UWLS	0.041 (0.006)	0.048 (0.000)	0.026 (0.226)	0.207 (0.231)	-0.065 (0.000)
N [k]	305 [38]	239 [40]	69 [14]	10 [2]	289 [47]
<i>B. Stock market capitalization</i>					
UWLS	0.129 (0.000)	0.087 (0.043)	0.211 (0.124)	-0.062 (0.727)	-0.067 (0.000)
N [k]	110 [19]	119 [22]	6 [2]	8 [3]	49 [16]

*Notes:* Each cell reports a separate regression. The dependent variable is the partial correlation between financial development and one of the five hypothesized determinants. Panels A and B present results for private credit and stock market capitalization, respectively. UWLS denotes unrestricted weighted least squares. N and k denote the number of estimates and the number of studies, respectively. All models estimated with weighted least squares using sample size weights. *p*-values reported in parentheses using standard errors corrected for within-study clustering.

**Table A4.**

Descriptive statistics, MRA moderator variables, private credit

	Description	Institutions N=500	Financial openness N=305	Trade openness N=239	Inflation N=288
		(1)	(2)	(3)	(4)
r	Partial correlation, the dependent variable	.168 (.217)	.054 (.228)	.098 (.137)	-.152 (.197)
	<i>Measure of institutions:</i>				
	<i>Baseline = aggregate index</i>				
French legal	Binary variable = 1 if estimate relates to French legal system	.151 (.359)	-	-	-
Rule of law	Binary variable = 1 if estimate relates to rule of law	.073 (.260)	-	-	-
Creditor protection	Binary variable = 1 if estimate relates to creditor protection	.219 (.414)	-	-	-
Democracy	Binary variable = 1 if estimate relates to democracy	.144 (.352)	-	-	-
Governance	Binary variable = 1 if estimate relates to governance	.104 (.306)	-	-	-
Economic freedom	Binary variable = 1 if estimate relates to economic freedom	.042 (.201)	-	-	-
Legal formalism	Binary variable = 1 if estimate relates to legal formalism	.020 (.140)	-	-	-
Creditor information	Binary variable = 1 if estimate relates to creditor information	.058 (.235)	-	-	-
	<i>Measure of financial openness:</i>				
	<i>Baseline = domestic financial openness</i>				
Government banks	Binary variable = 1 if estimate relates to government banks	-	.072 (.260)	-	-
Capital account	Binary variable = 1 if estimate relates to capital account liberalization	-	.427 (.495)	-	-
FDI	Binary variable = 1 if estimate relates to FDI	-	.303 (.460)	-	-
	<i>Measure of trade openness:</i>				
	<i>Baseline = total trade</i>				
Exports	Binary variable = 1 if estimate relates to exports/GDP	-	-	.211 (.409)	-
Constructed trade	Binary variable = 1 if estimate relates to a constructed measure of trade	-	-	.040 (.196)	-
	<i>Measure of inflation:</i>				
	<i>Baseline = inflation rate</i>				
Inflation change	Binary variable = 1 if estimate relates to the change in the inflation rate	-	-	-	.024 (.153)
Inflation threshold	Binary variable = 1 if estimate relates to a threshold inflation rate	-	-	-	.010 (.101)
	<i>Specification</i>				
Income	Binary variable = 1 if study controls for income	.703 (.458)	.701 (.459)	.805 (.397)	.754 (.431)
Remittances/trust	Binary variable = 1 if study controls for remittances and/or trust	.080 (.272)	.148 (.356)	.248 (.433)	.208 (.407)
Trade openness	Binary variable = 1 if study controls for trade openness	.394 (.489)	.595 (.492)	-	.437 (.497)
Financial openness	Binary variable = 1 if study controls for financial openness	.423 (.495)	-	.689 (.464)	.584 (.494)
Institutions	Binary variable = 1 if study controls for institutions	-	.613 (.488)	.649 (.478)	.543 (.499)
Inflation	Binary variable = 1 if study controls for inflation	.513 (.500)	.755 (.431)	.542 (.499)	-
	<i>Data:</i>				
Developing	Binary variable = 1 if data relate to developing and/or emerging economies	.485 (.500)	.680 (.467)	.460 (.499)	.648 (.478)

Panel	Binary variable = 1 if panel data used	.509 (.500)	.652 (.477)	.740 (.440)	.662 (.474)
Average year 1992	Average year of data used in the sample, normalized to 1992	-.727 (7.998)	1.414 (5.992)	-1.282 (7.167)	1.258 (6.899)
<i>Estimator:</i>					
Non-OLS	Binary variable = 1 if estimator other than OLS was used and endogeneity of variable of interest not corrected	.321 (.467)	.320 (.467)	.343 (.476)	.334 (.473)
Endogenous	Binary variable = 1 if study corrected for endogeneity of variable of interest	.095 (.293)	.115 (.319)	.176 (.382)	.065 (.247)
<i>Focus and bias</i>					
Focus of study	Binary variable = 1 if authors specifically interested in the effect of variable	.768 (.422)	.713 (.453)	.492 (.501)	.215 (.412)
SESQR	Standard error of partial correlation squared	.013 (.011)	.011 (.010)	.008 (.009)	.011 (.009)
Focus of study*SESQR	Interaction term	.010 (.011)	.009 (.011)	.004 (.008)	.003 (.007)

*Notes:* Cells report means and standard deviations in parentheses.

**Table A5.**

Descriptive statistics, MRA moderator variables, stock market capitalization

	Description	Institutions N=195	Financial openness N=110	Trade openness N=119	Inflation N=49
		(1)	(2)	(3)	(4)
r	Partial correlation, the dependent variable	.146 (.217)	.168 (.172)	.089 (.205)	-.106 (.123)
	<i>Measure of institutions: Baseline = aggregate index</i>				
French legal	Binary variable = 1 if estimate relates to French legal system	.113 (.317)	-	-	-
Rule of law	Binary variable = 1 if estimate relates to rule of law	.117 (.323)	-	-	-
Creditor protection	Binary variable = 1 if estimate relates to creditor protection	.089 (.286)	-	-	-
Democracy	Binary variable = 1 if estimate relates to democracy	.178 (.384)	-	-	-
Governance	Binary variable = 1 if estimate relates to governance	.141 (.349)	-	-	-
Economic freedom	Binary variable = 1 if estimate relates to economic freedom	.023 (.152)	-	-	-
Legal formalism	Binary variable = 1 if estimate relates to legal formalism	.052 (.222)	-	-	-
Creditor information	Binary variable = 1 if estimate relates to creditor information	.005 (.069)	-	-	-
	<i>Measure of financial openness: Baseline = domestic financial openness</i>				
Government banks	Binary variable = 1 if estimate relates to government banks	-	.033 (.180)	-	-
Capital account	Binary variable = 1 if estimate relates to capital account liberalization	-	.587 (.494)	-	-
FDI	Binary variable = 1 if estimate relates to FDI	-	.198 (.400)	-	-
	<i>Measure of trade openness: Baseline = total trade</i>				
Exports	Binary variable = 1 if estimate relates to exports/GDP	-	-	.038 (.193)	-
Constructed trade	Binary variable = 1 if estimate relates to a constructed measure of trade	-	-	.092 (.291)	-
	<i>Measure of inflation: Baseline = inflation rate</i>				
Inflation change	Binary variable = 1 if estimate relates to the change in the inflation rate	-	-	-	.167 (.376)
Inflation threshold	Binary variable = 1 if estimate relates to a threshold inflation rate	-	-	-	.074 (.264)
	<i>Specification</i>				
Income	Binary variable = 1 if study controls for income	.554 (.498)	.934 (.250)	.838 (.369)	.907 (.293)
Remittances/trust	Binary variable = 1 if study controls for remittances and/or trust	.099 (.299)	.050 (.218)	.046 (.211)	.056 (.231)
Trade openness	Binary variable = 1 if study controls for trade openness	.535 (.500)	.785 (.412)	-	.741 (.442)
Financial openness	Binary variable = 1 if study controls for financial openness	.380 (.487)	-	.508 (.502)	.463 (.503)
Institutions	Binary variable = 1 if study controls for institutions	-	.479 (.502)	.838 (.369)	.352 (.482)
Inflation	Binary variable = 1 if study controls for inflation	.197 (.399)	.463 (.501)	.285 (.453)	-
	<i>Data:</i>				
Developing	Binary variable = 1 if data relate to developing and/or emerging economies	.235 (.425)	.438 (.498)	.308 (.463)	.241 (.432)

Panel	Binary variable = 1 if panel data used	.606 (.490)	.818 (.387)	.808 (.396)	.926 (.264)
Average year 1992	Average year of data used in the sample, normalized to 1992	.782 (5.545)	-0.182 (4.655)	-1.015 (6.767)	1.852 (7.053)
<i>Estimator:</i>					
Non-OLS	Binary variable = 1 if estimator other than OLS was used and endogeneity of variable of interest not corrected	.268 (.444)	.281 (.451)	.262 (.441)	.148 (.359)
Endogenous	Binary variable = 1 if study corrected for endogeneity of variable of interest	.103 (.305)	.107 (.311)	.215 (.413)	.056 (.231)
<i>Focus and bias</i>					
Focus of study	Binary variable = 1 if authors specifically interested in the effect of variable	.770 (.422)	.926 (.263)	.677 (.469)	.407 (.496)
SESQR	Standard error of partial correlation squared	.013 (.013)	.013 (.014)	.011 (.010)	.012 (.009)
Focus of study*SESQR	Interaction term	.011 (.013)	.011 (.014)	.007 (.009)	.007 (.010)

*Notes:* Cells report means and standard deviations in brackets.



## Conditional meta-averages

The following table states the variables included in deriving the conditional meta-averages reported in Table 7 in the text. Columns (1) and (3) report the variables used to construct the Bayesian model averaging posterior means. These same variables are also used to construct the equivalent WLS specification. Columns (2) and (4) detail the general-to-specific variables. See Tables A7 and A8 below for the actual equivalent WLS specification and general-to-specific MRA.

**Table A6.**

Variables used to construct conditional BMA predictions, WLS model using variables identified by BMA, and G-to-S conditional meta-averages

	Private credit BMA (1)	Private credit general-to-specific model (2)	Stock market BMA (3)	Stock market general-to- specific model (4)
Institutions: -overall index	Constant + panel + trade openness	Constant + panel + trade openness	Constant + endogenous	Constant + endogenous + <i>trade openness + financial openness</i>
- rule of law	Constant + panel + trade openness + rule of law	Constant + panel + trade openness + rule of law	Constant + endogenous	Constant + endogenous + <i>trade openness + financial openness</i>
- French law	Constant + panel + trade openness + French legal	Constant + panel + trade openness + French legal	Constant + endogenous + French legal	Constant + endogenous + <i>trade openness + financial openness + French legal</i>
Financial openness: - domestic	Constant + trade + institutions + inflation	Constant + trade + institutions + inflation <i>+ endogenous</i>	Constant	Constant + <i>panel + income + trade openness + focus of study</i>
- capital account	Constant + trade + institutions + inflation + capital	Constant + trade + institutions + inflation <i>+ capital + endogenous</i>	Constant	Constant + <i>panel + income + trade openness + focus of study</i>
Trade openness	Constant + income + <i>panel + endogeneity</i>	Constant + income + <i>panel + endogeneity</i>	Constant + institutions	Constant + institutions
Inflation	Constant + institutions <i>+ focus of study</i>	Constant + institutions	Constant + financial openness + trade openness + endogenous + focus of study	Constant + financial openness + trade openness + endogenous + <i>panel</i>
Inflation - threshold	Constant + institutions <i>+ threshold + focus of study</i>	Constant + institutions <i>+ threshold</i>	Constant + financial openness + trade openness + endogenous + threshold + focus of study	Constant + financial openness + trade openness + endogenous + threshold + <i>panel</i>

Notes: Italics highlights differences in variables included.

**Table A7.**

Equivalent WLS specification constructed from Bayesian model averaging

	Institutions PC	Institutions SMC	Financial openness PC	Financial openness SMC	Trade openness PC	Trade openness SMC	Inflation PC	Inflation SMC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SESQR	-1.169 (-0.530)	5.650*** (4.043)	5.849* (1.916)	-	-5.185 (-1.617)	-	-7.921** (-2.606)	-
French legal	-0.162*** (-4.984)	-0.112* (-1.833)	-	-	-	-	-	-
Rule of law	0.136*** (2.992)	-	-	-	-	-	-	-
Creditor protection	-	-	-	-	-	-	-	-
Democracy	-0.075*** (-3.802)	-	-	-	-	-	-	-
Governance	-	-	-	-	-	-	-	-
Economic freedom	-	-	-	-	-	-	-	-
Legal formalism	-	-	-	-	-	-	-	-
Creditor information	-	-	-	-	-	-	-	-
Capital account	-	-	-0.139** (-2.578)	-	-	-	-	-
FDI	-	-	-0.210*** (-4.052)	-	-	-	-	-
Exports	-	-	-	-	-0.044 (-2.427)**	-	-	-
Constructed trade	-	-	-	-	-	-0.160*** (-3.920)	-	-
Inflation change	-	-	-	-	-	-	0.124** (2.317)	-
Inflation threshold	-	-	-	-	-	-	-0.089** (-2.273)	-0.105*** (-3.083)
Income	-	-	-	-	0.052 (3.828)***	-	-	-
Remittances/trust	-0.050*** (-3.892)	-	-	-	-	-	0.071** (2.667)	-
Trade openness	0.045** (2.158)	-	0.137*** (3.016)	-	-	-	-	-0.057*** (-3.149)
Financial openness	-	-	-	-	-	-	-	-0.130*** (-4.523)
Institutions	-	-	-0.037 (-1.679)	-	-	0.120* (1.869)	0.062 (1.545)	-
Inflation	-	-	0.066 (1.642)	-	-	-	-	-
Developing	-	0.098*** (2.870)	-	-	-	-	-	0.117** (2.393)
Non-OLS	-	-	-	-	-	0.117** (2.258)	-0.047*** (-2.749)	0.127*** (5.091)
Focus of study	-	-	-	-	-	-	-0.045 (-1.105)	-0.059* (-1.951)
Focus of study* SESQR	8.660*** (3.499)	-	-	-	10.099*** (3.098)	-	-	-
Panel	-0.067 (-1.501)	-	-	-	-0.191*** (-2.821)	-	-	-
Average year 1992	-	-	-	-	-	-	-	-

Endogenous	-	0.097*** (3.895)	-	-	-0.070*** (-3.700)	-	-	0.120*** (4.070)
Constant	0.140*** (2.741)	0.058*** (4.026)	0.005 (0.133)	0.133*** (8.576)	0.213*** (3.180)	-0.012 (-0.198)	-0.088*** (-2.860)	-0.017 (-0.702)
Observations	503	195	305	110	239	119	288	49
Number of studies	62	28	43	19	40	22	47	16
Joint bias test	0.003	-	-	-	0.013	-	-	0.000
Adjusted R <sup>2</sup>	0.409	0.301	0.240	0.001	0.351	0.327	0.287	0.631

*Notes:* The dependent variable is the partial correlation between financial development and a measure of institutions. SESQR is the standard error squared. PC and SMC denote private credit and stock market capitalization, respectively. Estimation using unrestricted weighted least squares, using inverse variance weights. *t*-statistics reported in parentheses using standard errors corrected for within-study clustering. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, and 1%, levels, respectively. Joint bias test reports the *p*-value of the statistical significance of both SESQR and Focus of study\* SESQR. A dash indicates the variable was not part of the MRA model.

**Table A8.**  
General-to-specific model MRA results

	Institutions PC	Institutions SMC	Financial openness PC	Financial openness SMC	Trade openness PC	Trade openness SMC	Inflation PC	Inflation SMC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SESQR	-1.968 (-0.820)	3.083 (1.362)	5.834* (1.914)	-	-5.185 (-1.62)	-	-7.314** (2.42)	-
French legal	-0.161*** (-4.968)	-0.188*** (-3.232)	-	-	-	-	-	-
Rule of law	0.141*** (3.086)	-	-	-	-	-	-	-
Creditor protection	-	-	-	-	-	-	-	-
Democracy	-0.075*** (-3.750)	-0.096** (-2.288)	-	-	-	-	-	-
Governance	-	-0.052* (-1.921)	-	-	-	-	-	-
Economic freedom	0.087** (2.211)	0.060* (1.794)	-	-	-	-	-	-
Legal formalism	-	-	-	-	-	-	-	-
Creditor information	-	-	-	-	-	-	-	-
Capital account	-	-	-0.130** (-2.439)	-	-	-	-	-
FDI	-	-	-0.208*** (-4.113)	-	-	-	-	-
Exports	-	-	-	-	-0.044 (-2.43)**	-	-	-
Constructed trade	-	-	-	-	-	-0.160*** (-3.92)	-	-
Inflation change	-	-	-	-	-	-	0.102*** (2.95)	-0.071** (-2.09)
Inflation threshold	-	-	-	-	-	-	-0.109*** (-6.49)	-0.111*** (-3.77)
Income	-	-	-	-0.111*** (-4.38)	0.052 (3.83)***	-	-	-
Remittances/trust	-0.050*** (-3.798)	-	-	0.141*** (8.33)	-	-	0.072** (2.61)	-
Trade openness	0.047** (2.255)	0.055* (1.990)	0.136*** (3.063)	0.068*** (3.95)	-	-	-	-0.076*** (-4.55)
Financial openness	-	-0.057** (-2.524)	-	-	-	-	-	-0.153*** (-4.94)
Institutions	-	-	-0.040* (-1.894)	-	-	0.120* (1.87)	0.036* (1.86)	-
Inflation	-	-	0.069* (1.721)	-	-	-	-	-
Developing	-	0.076* (1.889)	-	-	-	-	-	0.117** (2.54)
Non-OLS	-	-	-	-	-	0.117** (2.26)	-0.050*** (-2.72)	0.139*** (7.18)
Focus of study	-	-	-	0.225*** (7.11)	-	-	-	-
Focus of study* SESQR	8.985*** (3.570)	4.281 (1.393)	-	-	10.099*** (3.10)	-	-	-
Panel	-0.076 (-1.664)	-	-	-0.251*** (-21.35)	-0.191*** (-2.82)	-	-	0.125*** (3.85)
Average year 1992	-	-0.005* (-1.715)	-	-	-	-	-	-

Endogenous	-	0.100*** (3.203)	-0.026** (-2.202)	-	-0.070*** (-3.70)	-	-	0.128*** (4.30)
Constant	0.147*** (2.876)	0.072*** (4.550)	0.004 (0.110)	0.206*** (6.34)	0.213*** (3.18)	-0.012 (-0.20)	-0.090*** (-2.71)	-0.120*** (-17.51)
Observations	503	195	305	110	239	119	288	49
Number of studies	62	28	43	19	40	22	47	16
Joint bias test	0.003	0.000	-	-	0.013	-	-	0.000
Adjusted R <sup>2</sup>	0.412	0.353	0.245	0.164	0.351	0.327	0.271	0.637

*Notes:* The dependent variable is the partial correlation between financial development and a measure of institutions. SESQR is the standard error squared. PC and SMC denote private credit and stock market capitalization, respectively. Estimation using unrestricted weighted least squares, using inverse variance weights. *t*-statistics reported in parentheses using standard errors corrected for within-study clustering. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, and 1%, levels, respectively. Joint bias test reports the *p*-value of the statistical significance of both SESQR and Focus of study\* SESQR. A dash indicates the variable was not part of the MRA model.