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On The Nonlinearity of the Finance and Growth Relation: the Role of Human Capital

Alberto Bucci* Boubacar Diallo† Simone Marsiglio‡

Abstract

We analyze the role that human capital plays in driving the non-monotonic relation between economic growth and financial development. At this aim we build a theoretical model of endogenous growth in which the nature of the growth and finance nexus is nonlinear and actually depends on the educational level, which ultimately determines the way through which financial development affects both the productivity and the depreciation of human capital. The dependence of the non-monotonic (i.e., bell-shaped) growth and finance nexus on human capital suggests that there may exist a threshold education level beyond which the sign of the relation changes. We econometrically test such a theoretical prediction in a rich and large data set comprising a cross-section of 133 countries over the period 1970-2011. We rely on the GMM instrumental variable approach to address endogeneity issues, and we consider a large number of control variables. After performing a number of robustness checks, all our results are consistent with the view that human capital helps to explain the nonlinear relationship between finance and growth. In particular, we find support for our theoretical model's conclusion that financial development may be harmful to economic growth in countries that already have high levels of education, while it may be beneficial in those countries in which human capital is less abundant.

Keywords: Economic Growth; Financial Development; Human Capital
JEL Classification: G00; G10; O40; O41

1 Introduction

Despite the long-lasting debate on the impact that finance may have on economic growth, a commonly shared view has not arisen yet. While several papers argue that a well-developed financial system is conducive to a higher economic growth rate (Greenwood and Jovanovic, 1990; King and Levine, 1993a,b; Levine, 1997; Beck et al., 2000a; Stiglitz, 2010), others claim that the role of the financial system, in popular as well as professional discussions, is probably too much overstressed (Lucas, 1988, p.6), or that its unregulated development may even harm economic growth (Schularick and Taylor, 2012; Mian and Sufi, 2014). Recent empirical studies suggest that the possible growth effect (either positive or negative) of financial deepening has vanished since the 1990s (Rousseau and Wachtel, 2011; Arcand et al., 2015).

Due to its negative effects on the real economy (resulting into a worldwide economic recession, huge losses on financial markets, and the bankruptcy of several financial institutions), the global financial crisis of 2007-2008 has ultimately undermined the credibility of the whole financial system and changed the public's perception towards finance (Zingales, 2015). Therefore, understanding whether and to what extent finance affects economic growth still is not only an actual research question, but also a current priority for policymakers. In this paper we contribute to this ongoing debate in the sense that, among the possible

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mechanisms through which financial development can eventually influence economic growth, we especially focus on the potential role played by human capital.

In this regard, Figure 1 shows the correlation between financial development and human capital, with human capital being proxied either by the Barro and Lee's (2013) measure of schooling attainment or by that of the World Bank with respect to school enrolment. According to this figure the correlation between financial development and human capital is evidently positive. A number of studies have already explored those factors that are potentially able to influence a country's degree of financial development. Among them are national legal origin (La Porta et al., 1997, 1998), the settler-mortality-hypothesis (Acemoglu et al., 2001), institutional factors (Beck et al., 2003a), political factors (Rajan and Zingales, 1998; Outreville, 1999), as well as cultural factors (Stultz and Williamson, 2003).

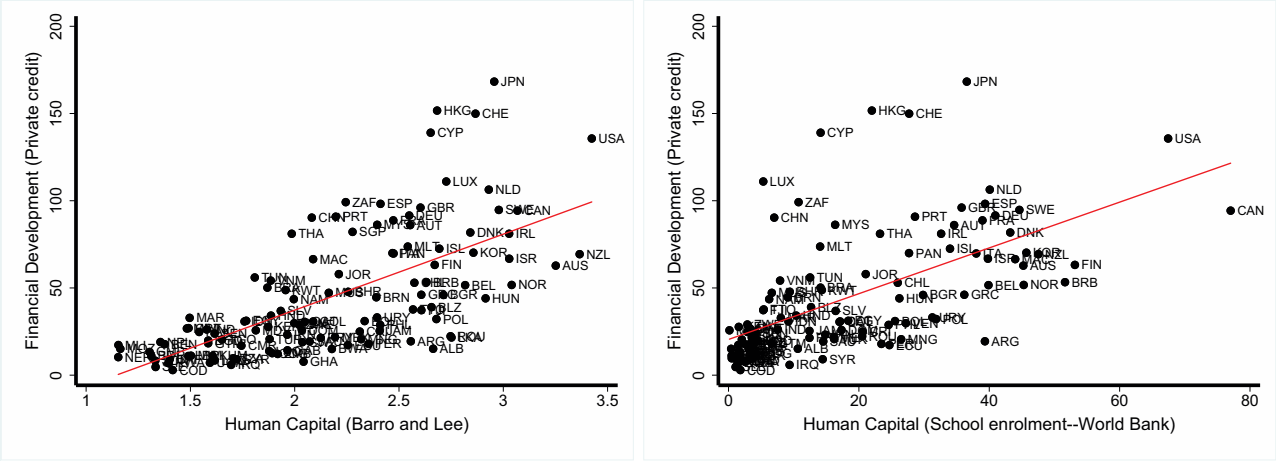

Figure 1: Correlation between financial development and human capital in a dataset of 74 countries (among which 23 OECD nations) over the period 1970-2011, where human capital is proxied by either the Barro-Lee (left) or the World Bank (right) measures of education.

The relationship between financial development and human capital remains less explored (Grier 2005). Still, the ways in which human capital may possibly affect financial development are numerous: for example, better educational levels can provide new opportunities to people and hence allow them to have access also to rather sophisticated financial products/services; skilled and well-educated people have generally better information and therefore are more likely to behave in a less risk-adverse manner, which ultimately induces them to save more (Kelley, 1980). From the empirical point of view, Outreville (1999) has been among the first to find a high and positive correlation between measures of financial development and measures of human capital in a cross-section of 57 countries.[1] Kendall (2012), investigates the link of financial development and human capital to economic growth in India. Using data from each Indian state, he finds that those states being in the lowest quartile of financial development (credit/net domestic product) had economic growth rates 4% points lower than those in the upper quartile. However, he also notes that this financial constraint can be greatly reduced with a greater amount of human capital. Chou and Chinn (2001) in their theoretical model consider endogenous human capital accumulation, economic growth and financial innovation in a unified framework and conclude that human capital makes financial innovations simpler to attain, which leads to greater financial development, and eventually to additional human capital accumulation and further economic growth. Indeed, Kneer (2013), based on a sample of 13 EU countries,

[1] His empirical results indicate that human capital is, too, an important factor explaining the level of financial development. In his words: *"...The linear regression analysis of measures of financial development on measures of human capital development... confirms that measures of financial development are positively correlated with... measures of human capital development..."* (Outreville, 1999, pp. 12–13).

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finds that over the period 1980–2005 a relevant number of highly skilled and talented people moved to the financial sector resulting in a sort of "brain-drain" from the non-financial sector. This implies a decline in labor productivity, total factor productivity and value added growth in the R&D-skill-intensive-industries. The misallocation of labor across sectors following the financial sector's liberalization reforms of 1980–2005 has been observed by other studies, as well (for example, see Cecchetti and Kharroubi, 2012). Philippon and Reshef (2013) show that financial liberalization has led to an increase in the skill-intensity of the US financial sector. The simultaneous increased ICT intensity of this sector has created higher demand for skilled labor. Eventually, the increased demand for skilled labor in the financial industry could have been among the possible explanations for the augmented level of financial development that we recently observe in many countries (especially in the advanced ones). Overall, this discussion points to the fact that the human capital's endowment of a country may somehow (either theoretically, or empirically, or simply anecdotally) be able to affect the degree of its financial development, and the recognition of this fact is at the heart of the current's paper choice of focusing on human capital as a fundamental driver of the long-run relation between finance and economic growth.

We develop a theoretical model of endogenous growth where the nature of the growth–finance nexus ultimately depends on the education level, which determines the way through which financial development affects both the productivity and the depreciation of human capital (Bucci and Marsiglio, 2019). This allows for the possibility that the growth–finance nexus is nonlinear (and specifically bell-shaped) and depending on human capital, suggesting that there may exist a threshold education level beyond which the sign of the relation changes. We econometrically test such predictions by augmenting the path-breaking econometric approach of Arcand et al. (2015) by the presence of an interaction term between financial development (proxied by bank credit to the private sector) and human capital (proxied by schooling). This term aims to uncover whether human capital is really the driver of the observed growth and finance relation. Our data set includes a cross-section of 133 countries over the period 1970-2011, and we rely on the difference and system generalized methods of moments (GMM) instrumental variable approach developed Arellano and Bover (1995) and Blundell and Bond (1998) to address endogeneity issues. Therefore, our framework departs from Arcand et al.'s (2015) along two main directions. First, we specifically investigate the role played by human capital in shaping such a relation: even if they control for human capital they do not explicitly focus on its role nor interact it with measures of financial development, thus our model is able to explain why the finance and growth nexus may be nonlinear. Second, different from them who use internal instruments exploiting the presence of heteroskedasticity in their model's residuals, in order to deal with endogeneity issues we combine the GMM estimator with instrumental variable method based on legal origin dummies. Moreover, in our analysis we consider a large number of control variables and perform several robustness checks by using different measures of financial development and different measures of human capital.

All our results are consistent with the following conclusions. Although the squared term for financial development measured by private credit is statistically significant, its magnitude is almost null suggesting, differently from Arcand et al. (2015), the existence of a weak nonlinear relation between growth and finance. When using alternative measures of financial development such as liquid liabilities and bank assets, such a nonlinear relation ceases to exist. However, the interaction term between financial development and human capital is significant and negative, suggesting that the nonlinear effect of financial development on growth is actually driven by the level of human capital. Specifically, consistently with the predictions of our theoretical model, financial development may be harmful to economic growth in countries that have already high levels of human capital, while it may be beneficial in those countries in which human capital is less abundant. With our baseline model, which uses private credit and education attainment following Barro and Lee, we find that the threshold of human capital approximately ranges from 2 to 3 years of schooling. In terms of school enrolment we find a threshold ranging from 3 to 43 percent according to the control variables used. To the best of our knowledge no other paper thus far has been able to clearly identify human capital as a

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driver of the non-monotonic growth and finance nexus in a way comparable to ours.

The paper proceeds as follows. Section 2 briefly reviews some related literature on the growth and finance relation. Section 3 presents our theoretical framework with the objective to explain why human capital may play an important role in the finance-growth nexus. Section 4 introduces our econometric framework discussing our data set and methodology. Section 5 presents our main empirical results suggesting that the finance and growth relation is driven by human capital. Section 6 performs some robustness checks confirming our main results. Section 7 further validate our estimates by relying on industry-level data. Section 8 as usual concludes and presents directions for future research. Additional details on the countries included in our dataset and our variable definitions are relegated in appendix A and B, respectively.

2 Related Literature

The literature on the growth and finance relation is massive and it has grown larger in the aftermath of the global financial crisis. It is thus out of the scope of this section to perform a systematic review, but rather we wish to discuss some noteworthy works which have played a significant role in driving our analysis to put in context our contribution.

The first empirical evidence on the finance-growth nexus dates back to Goldsmith (1969) and McKinnon (1973), who find positive correlations between the size of the financial sector and long-run economic growth. King and Levine (1993a, 1993b) and Levine (1997) extend these studies by accounting for potential confounding factors. In particular, by controlling for a large number of factors typically associated with economic growth (such as initial wealth, school enrollment, and population growth), King and Levine (1993a,1993b) confirm the strong positive association between financial development (proxied by various indicators, including bank credit to the private sector over GDP, liquid liabilities of the financial system over GDP, bank credit over the total of bank credit and central bank domestic assets) and economic growth in a large cross-section of 80 countries over the 1960-1989 period. However, their results cannot alleviate concerns of reverse causation in the relation between finance and economic growth. To tackle the endogeneity problem, Levine et al. (2000) employ the national legal origin as an external instrument for financial development, following the influential papers by La Porta et al. (1997, 1998) and Beck et al. (2003b) that stress a strong link between law and finance. An alternative strategy is used by Beck et al. (2000a), who employ lagged variables as internal instruments in panel data estimations.

All in all, several papers have over the years improved King and Levine's (1993a,1993b) pioneering econometric framework by broadening the sample, or extending the time period, or else relying on more advanced techniques. Though, most of these works confirm the optimistic view that financial development is a beneficial determinant of economic growth.[2] Even if very few studies find evidence supporting the opposite pessimistic view that financial development plays a detrimental role for economic growth (Luintel and Khan, 1999), a growing number of works has recently cast doubts not only on the positive sign of the relation but also on its monotonicity. In this respect, by re-examining traditional ideas in the wake of the financial crisis of 2007-2008, Rousseau and Wachtel (2011) find that the influence of finance has considerably weakened over time.[3] According to them, the positive impact of finance on economic growth during the period from 1960 to 1989 has vanished during the post-1990 period and has eventually become (slightly) negative. Arcand et al. (2015), by analyzing a cross-section of 67 countries over the 1970-2000 period, argue that this "vanishing effect" of finance is mostly attributable to the nonlinearity in the financial development-

[2]Using data for the period 1960-2000, Henderson et al. (2013) show that the positive growth effect of finance holds when applying non-parametric estimations. Arestis et al. (2015) summarize the recent generation of studies in a meta-analysis and find an overall positive relation between financial development and economic growth. For extensive surveys, see also Levine (2005), Ang (2008), Beck (2008), and Panizza (2014).

[3]Demetriadis and Rousseau (2016) strengthen this argument and conclude that at the moment financial development is no longer a determinant of long run growth.

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growth nexus. In particular, they show that, while initially providing positive growth effects, the impact of financial development on living standards turns negative once credit to the private sector reaches a critical threshold of 80–100% of GDP. Consistently with Arcand et al. (2015), several studies have analyzed the non-monotonicity underlying the growth-finance nexus by using various datasets, empirical approaches, and time periods, confirming the existence of a critical threshold-value of financial development (between 75% and 110% of GDP) after which this variable starts having detrimental growth effects (Deidda and Fattouh, 2002; Rioja and Valev, 2004; Shen and Lee, 2006; Manganelli and Popov, 2013; Beck et al., 2014; Law and Singh, 2014; Aizenman et al., 2015; see also Popov, 2018, for a recent survey). In this paper, we wish to contribute to this empirical literature on the nonlinear growth effects of financial development, by shedding some light on why a critical threshold level of financial development might actually exist, and on the possible role played in all this by human capital.

Given the specific nature of financial activities, understanding how and through which particular channel(s) financial development can affect economic growth is not simple since financial depth may critically influence in different ways technological progress and the accumulation of the diverse production factors. Several authors have tried to analyze from a theoretical perspective how financial development, by interacting either with physical capital accumulation (Pagano, 1993; Trew, 2014; Bucci et al., 2020), or with human capital investment (De Gregorio, 1996; De Gregorio and Kim, 2000; Bucci and Marsiglio, 2019), or else with technological progress (Pagano, 1993; Morales, 2003; Trew, 2008) may impact on economic growth. On the whole, existing theoretical works draw attention to very few alternative explanations as to why the relation between finance and economic growth can be non-monotonic in sign. These explanations are mainly related to the fact that financial development may, respectively: divert financial activities towards services with low growth potential (Rioja and Valev, 2012); generate a trade-off between economic growth and fragility (Rancière et al., 2008); promote a brain-drain from real towards financial activities, so shifting talented workers from productive into unproductive sectors (Philippon and Reshef, 2012); generate a kind of trade-off between productivity and obsolescence in human capital accumulation (Bucci and Marsiglio, 2019).

Out of these possible explanations, only the last one identifies theoretically in human capital an important channel through which the non-monotonicity of the finance-growth relation can ultimately manifest itself. The argument can be summarized as follows. On the one hand, schooling models (Becker, 1960; Lochner and Monge-Naranjo, 2012) show that borrowing constraints lead to under-investment in human capital. As education works as a major engine of growth (Lucas, 1988), the presence of credit constraints ultimately hampers economic development. Finance, by relaxing these constraints, contribute to promote human capital accumulation, and therefore economic growth (Banerjee and Newman, 1993; Galor and Zeira, 1993; Sun and Yannelis, 2016). On the other hand, however, by favoring technological progress[4] financial development also accelerates human capital erosion (Galor and Moav, 2002) and thus slows down economic growth. In the end, it is therefore possible that, via the human capital-channel, financial development might affect economic growth in a non-monotonic way. Despite this compelling argument, in empirical studies on the growth-finance nexus the role played by human capital has also seldom been formally taken into account thus far (Jerzmanowski, 2017; Gründler, 2019). Jerzmanowski (2017) relies on the U.S. banking deregulation as an exogenous factor to investigate the potential channels through which financial development influences economic growth. In doing so, he finds that banking deregulation boots growth by increasing both TFP growth and the accumulation of physical capital, but without having any impact on human capital. Gründler (2019) analyzes the transmission channels of financial development to economic growth, concluding that finance plays a beneficial effect in poor countries by increasing education and investment, and by decreasing

[4]Theories according to which financial development generates permanent growth effects by increasing knowledge and productivity include Morales (2003) and Buera et al. (2011). These theories have found support in empirical studies conducted by Ang (2011), Ang and Madsen (2011), and especially Meierrieks (2014), that show that financial development increases the ability of firms to innovate (see also Gorodnichenko and Schnitzer, 2013).

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fertility. We contribute to this scant literature on the role of human capital on the growth and finance relation by disentangling the effects of financial development on human capital and, through this channel, on economic growth in order to test the hypothesis that education may ultimately be the channel through which the nonlinear effects of financial development on economic growth manifest themselves. Differently from Jerzmanowski (2017), we use several measures of financial development (i.e., private credit, bank assets and liquid liabilities) instead of focusing only on banking deregulation, and we rely on a large cross-country dataset consisting of developed, emerging and developing economies. Differently from Gründler (2019), we specifically explain the nonlinearity between financial development and economic growth through human capital, and we use a wider set of regressors (including both linear and squared measures of financial development, human capital and an interaction term between financial development and human capital), which allow us to determine the threshold level beyond which finance becomes detrimental for growth both in terms of financial development and human capital levels.

3 The Theoretical Model

Following Bucci and Marsiglio's (2019) argument, we present a stylized theoretical model with the purpose of examining whether, and eventually how, the link between long-term economic growth and financial development might be affected by human capital. At this aim, we consider a Solow-type (1956) framework with physical and human capital accumulation in which agents' choices are exogenously given,[5] and analyze a closed economy in which the unique final good, y_t, is produced through a Cobb-Douglas production function employing physical capital, k_t, and human capital, h_t, as inputs as follows: $y_t = Ak_t^{\alpha}(uh_t)^{1-\alpha}$. In the equation above $0 < \alpha < 1$ is the physical capital share, $A > 0$ measures total factor productivity, and $0 < u < 1$ is the exogenous share of human capital devoted to output production.[6] Output can be either consumed or saved at a given rate $0 < s < 1$, and then invested in physical capital accumulation. Hence, the dynamics of physical capital is: $\dot{k}_t = sy_t - \delta_k k_t$, where $\delta_k > 0$ is the instantaneous depreciation rate of k_t. The amount of human capital not allocated to output production $1 - u$ is devoted to the acquisition of new human capital according to the following law of motion: $\dot{h}_t = \theta(1-u)h_t - \delta_h h_t$, where $\theta > 0$ is the productivity of human capital employed in the educational sector and $\delta_h > 0$ is the instantaneous depreciation rate of h_t. We postulate that financial development, measured by the parameter $\phi > 0$, affects both physical and human capital accumulations through its impact on the state of technology, $A(\phi)$, on the productivity of human capital in education, $\theta(\phi)$, and on the obsolescence of human capital, $\delta_h(\phi)$. Behind these assumptions there is our conjecture that, by permitting a more efficient allocation of resources, a higher degree of financial development allows to increase both total factor productivity, $A'(\phi) > 0$, and the productivity with which the existing stock of human capital is employed in schooling acquisition, $\theta'(\phi) > 0$. However, because of the rise of the state of technology, an improvement in the level of financial development also makes human capital more subject to physical obsolescence, so increasing its instantaneous depreciation rate, $\delta_h'(\phi) > 0$. In this way we formalize and explicitly take into account the Galor and Moav's (2002) so-called "erosion effect".[7] Our model is therefore summarized by the following planar system of differential equations:

$$\dot{k}_t = sA(\phi)k_t^{\alpha}(uh_t)^{1-\alpha} - \delta_k k_t \tag{1}$$

$$\dot{h}_t = \theta(\phi)(1-u)h_t - \delta_h(\phi)h_t \tag{2}$$

[5] This is done just for the sake of simplicity. Results remain unchanged also if one considers a context where agents optimally determine their own behavior (as in Bucci and Marsiglio, 2019).

[6] To make things as much easy as possible, assume that there is no population growth and that population size is normalized to one, so that aggregate and per-capita variables do coincide.

[7] *"...Technological progress reduces the adaptability of existing human capital for the new technological environment (the 'erosion effect')... In particular, the time required for learning the new technology... increases with the rate of technological change..."*, Galor and Moav (2002, p. 1148).

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The analysis of the above system shows that in a long-run equilibrium, where each time-dependent variable grows at a constant rate, the economy develops along a balanced growth path in which all variables (output, physical, and human capital) grow at the same rate given by:

$$\gamma \quad = \quad \gamma_y = \gamma_k = \gamma_h = \theta(\phi)(1-u) - \delta_h(\phi). \tag{3}$$

Provided that human capital productivity in the education sector (weighted by the share of educational human capital) is large enough, i.e. $\theta(\phi)(1-u) > \delta_h(\phi)$, the economic growth rate is strictly positive. In such a case, it is straightforward to observe that the rate of economic growth may depend nonlinearly on financial development, as an increase in ϕ yields two simultaneous but opposite effects: namely, a productivity effect, $\theta'(\phi) > 0$, and a depreciation effect, $\delta'_h(\phi) > 0$. If the former effect dominates at lower levels of financial development while the latter at higher levels, we can conclude that the overall relationship between finance and growth is non-monotonic, and specifically bell-shaped, along with the fact that human capital is an important driver of the nonlinear nexus between finance and long-run economic growth.

Note that, as highlighted earlier in our introduction (see Figure 1), there exists a strong positive correlation between financial development and human capital, suggesting that financial development increases with human capital. This result can be better formalized by postulating the following relation: $\phi = \phi(h_t)$ where $\phi' > 0$, which implies that, as human capital accumulates, the level of financial development increases as well which, in turn, has a feedback impact on the process of agents' skill-acquisition (and, hence, on the rate of economic growth), through the productivity and depreciation effects described above. In light of this, we need to partly amend our previous theoretical conclusions. Indeed, considering the existence of a positive finance-human capital relation, the economic growth rate in (3) needs to be modified as follows:

$$\gamma \quad = \quad \theta(\phi(h_t))(1-u) - \delta_h(\phi(h_t)), \tag{4}$$

which suggests that the level of human capital plays a critical role in determining long run macroeconomic outcomes as, by affecting the level of financial development, it has an impact both on the productivity and the depreciation effects, ultimately determining the sign of the growth-finance nexus. The equation above allows us to derive the two main conclusions that we test in the data and that represent the focus of our empirical analysis: (i) the growth and finance relation is non-monotonic and it does depend on the level of human capital; and (ii) there exists a threshold human capital value beyond which the sign of the growth and finance relation radically changes.

4 The Econometric Model

To validate the theoretical predictions of our paper, we estimate an econometric model with a panel of 5-year periods using the interaction terms between financial development and human capital given by the equation below:

$$g_{i,t} = \beta_0 + \beta_y(y_{i,t} - y_1) + \beta_f F_{i,t} + \beta_e Educ_{i,t} + \beta_{fe} F_{i,t}.Educ_{i,t} + \beta_{ff} F_{i,t}^2 + Controls_{i,t} + \epsilon_{i,t} \tag{5}$$

where i and t denote country and period, respectively. g is the average of the rate of per-capita GDP growth over the sample period 1970- 2011, decomposed in 5-year sub-periods over the whole sample. The average of the level of financial development over the 5-year period is denoted by $F_{i,t}$, and $Educi, t$ is the country's average of the level of education over the period. Following Aghion et al. (2005) and Diallo and Koch (2018), we introduce $y_{i,t}$, which is the average 5-year periods of the logarithm of per-capita GDP, whereas y_1 is the logarithm of the US per-capita GDP, which is considered to be the worldwide technological leader, according to the empirical Schumpeterian growth literature. We add several types control variables as competiting channels following the literature of finance and economic growth. For example, we add confounding factors such as macroeconomic variables: money growth, trade, government consumption,

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measures of banking market structure, namely bank concentration and concentration, institutions captures by a country's level of corruption, property and creditor rights as well as geography using landlocked and latitude; $\epsilon_{i,t}$ is an error term; and $\beta_0, \beta_y, \beta_f, \beta_e, \beta_{fe}$ and β_{ff} are constant coefficients. In addition, we add the square term of financial development in order to take the findings of Arcand et al. (2015) into account.

Estimating (5) with an OLS approach will lead to bias estimates because this technique cannot rule out endogeneity issues. In our case both financial development and education might be endogenous with respect to economic growth. If this is indeed the case, then it would ultimately mean that economic growth boosts financial development and human capital leading to reverse causality. In order to avoid this reverse causality and take care of the endogeneity problems, we use the difference and system GMM estimators developed by Arellano and Bover (1995), and Blunderll and Bond (1998) and recently popularized by Roodman (2009). This technique permits us to use both internal and external instruments to deal with the endogeneity issue. More precisely, we first use legal origin dummies, namely a given country's level system (English, French and German) as external instruments for our measures of financial development.[8] The validity of these instruments have been investigated by several authors such as Levine et al. (2000) and Aghion et al. (2005), and more recently Diallo and Koch (2017). For education we make use of the internal instruments using the difference and system GMM estimators. Specifically, this method allows us to use the lag of the exogenous and endogenous variables prior or equal to the second period $t-2$ as instruments in the first difference regressions. Additionally, we complement this technique with the two-step procedure offered by Windmeijer (2005) in order to adjust the standard errors and correct for the small sample bias often present in this type of empirical exercise in the literature of growth. To test for the robustness of the difference and system GMM estimators we report the Sargan/Hansen statistics for the validity of the instruments as well as the autocorrelation test for the selection of the number of lags as instruments.

In terms of data, the measure of real per-capita GDP is taken from Penn World Table No. 8.1, which is available from the Groningen Growth and Development Center.[9] $y_{i,t} - \bar{y}$ captures the proximity of country i to the global technology frontier (the US), calculated as the maximum of the initial per-capita real GDP. More specifically, it is measured as the log of the share of country i's initial per-capita real GDP to the initial per-capita real GDP of the US in 1970. The preferred measure of financial development is proxied by private credit taken from the World Bank, and is calculated as the credit provided by the banking sector, including all credit provided to various sectors on a gross basis, with the exception of credit given to the central government, which is net.[10] As robustness checks, we apply bank assets and liquid liabilities as alternative measures of financial development. Bank assets are calculated as the total assets held by deposit money banks as a share of the sum of the claims of deposit money banks and the central bank on the domestic nonfinancial real sector. Assets are defined as claims on the domestic real nonfinancial sector, including central, state and local governments; nonfinancial public enterprises and the private sector. Deposit money banks are defined as commercial banks and other financial institutions that accept transferable deposits (e.g. demand deposits). Liquid liabilities are given as a percentage of GDP, which is also known as broad money or M3. Liquid liabilities are made up of the sum of currency and deposits in the central bank (M0); plus electronic currency and transferable deposits (M1); plus currency transferable deposits, securities repurchase agreements, time and savings deposits and foreign certificates of deposit (M2); plus commercial paper travelers' checks, foreign currency time deposits and the share of mutual funds or market funds held by residents. We first use the measure of education developed by Barro and Lee (2013), calculated as the average of years of schooling of males and females above 25 years of age taken from Penn World Table No. 8.1. The second measure of human capital is determined by total enrolment in secondary school level education, regardless of age, which is expressed as a percentage of the population of official secondary school

[8] Legal origin dummies are taken from La Porta et al. (2008). This dataset is available at: http://mba.tuck.dartmouth.edu/pages/faculty/rafael.laporta/publications.html.

[9] The dataset is publicly available at http://www.rug.nl/research/ggdc/data/penn-world-table/.

[10] See Aghion et al. (2005), Beck et al. (2000b), and Diallo and Koch (2017), among others, for the use of this measure.

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age provided by the World Bank.[11] Money growth, trade and government consumption taken from the World Bank are used to control for macroeconomic outcomes. Specifically, money growth is defined as the average annual growth rate in money, whereas government consumption is given as a percentage of GDP. This includes all government expenditure for purchases of goods and services (including employee compensation). Trade is defined as the sum of exports and imports in terms of the percentage of GDP.[12] For institutional variables, we use corruption, property and creditor rights, taken from La Porta et al. (2008). To control for geographical elements that might affect institutional and financial development, we control our findings with latitude and the dummy variable "landlocked" taken from CEPII.[13] Finally, following Diallo and Koch (2017), we add bank concentration, measured as the share of assets held by the five largest banks in terms of total banking assets. Additionally, we also control the findings for bank competition measured by the Lerner index, which is defined as the ratio of the difference between price and marginal cost over price and ranges from 0 to 1, with higher values indicating less bank competition. The introduction of bank competition allows us to account for for Claessens and Laeven's (2005) findings.

Table 1 around here

Table 1 shows some descriptive statistics of the study variables. The average 5-year periods of per-capita GDP growth is 1.38% with a standard deviation of 3.48, and a minimium and maximum of -24.56 and 24.15%, respectively. Our preferred measured of financial development, namely private credit has an average of 42.76% in terms of GDP, with a minimum of 1.06 and a maximum of 289.2%. The first measure of education taken from Barro and Lee has an average of 2.24 years, with a minimum and maximum of 1.05 and 3.62 years, respectively. However, the average of our measure of education captured by school enrolment is 18.49, with a minimum of 0 and a maximum of 100, respectively. In terms of control variables, money growth, trade and government consumption have averages of 34.91, 81.31 and 16.10% in terms of GDP, respectively. For banking variables such as bank concentration and the Lerner index they have averages of 81.38 and 0.25, respectively. Institutional variables measured by corruption, property and creditor rights have averages of 0.09, 3.01 and 1.76, respectively. For the geographical variables, latitude has an average of 18.07, with a minimum of -44.28 and a maximum of 64.15, while the dummy variable "landlocked" shows that approximately 20% of countries are landlocked in average in our sample. For legal origin, the statistics show that 33% of countries in average have the British legal system, 53% the French legal system and 10% the German legal system.

5 Results

This section discusses the main results of our empirical analysis, which as we shall later clarify are robust to a number of different specifications.

Table 2 around here

Table 2 presents our baseline results validating our theoretical model using the difference and system GMM estimators to tackle the endogeneity issues. In doing so, Column (1) replicates the results of Arcand

[11]The data on education are sourced from the World Development Indicators, available at: http://www.worldbank.org/.

[12]The data for the macroeconomic policies variables have been taken from the World Development Indicators, available at: http://www.worldbank.org/.

[13]The data on geography are available at: http://www.cepii.fr/.

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et al. (2015) by regressing the proximity to the technology frontier, private credit and its square term on per-capita GDP growth. The coefficient associated with proximity to the frontier is negative and significantly different from zero at 1% level, confirming the convergence theory in growth models, namely that financial development has a positive and significant effect on growth at the 1% level. However, the square term of private credit enters negatively and significantly different from zero at the 1% level. This suggests that financial development has an inverted-U shaped effect on growth, confirming Arcand et al.'s (2015) results. Using the coefficients obtained in Column (1), we calculate the threshold level of financial development from which finance becomes harmful to economic growth. In line with Arcand et al. (2015) we find a threshold of 100.82% for private credit in terms of GDP.

Column (2) tests our main theoretical conjecture, namely the nonlinear effect of financial development on growth through the human capital channel. Our theory suggests that the effect of financial development on economic growth is nonlinear, depending on two factors: financial development increases the investment in human capital, which leads to higher productivity (productivity effect); however, better financial institutions increase the depreciation of the stock of human capital because of obsolescence (depreciation effect). Put differently, financial development is beneficial to growth for countries with lower levels of human capital but detrimental for growth for those countries that have already accumulated a certain level of human capital. In order to test this theory we add the interaction term between financial development and human capital and re-estimate the model. We find that the interaction between financial development and human capital enters negatively and significantly different from zero at the 1% level, suggesting that there is a nonlinear relationship between finance and growth through the channel of human capital. This finding confirms the theoretical prediction of the model. More importantly, the introduction of the interaction term between financial development and human capital makes the coefficient of financial development squared close to zero and therefore, the inverted-U shaped effect of financial development on growth as argued by Arcand et al. (2015) disappears. This finding further supports our conclusion regarding the specific role played by human capital in affecting the relationship between financial development and economic growth. With respect to instruments validity we report for all columns the Hansen and autocorrelation (AR2) tests. According to these statistics we do not reject the null hypothesis across all specifications suggesting the appropriateness and validity of the difference and system GMM estimators. Using the coefficients obtained in Column (2), we calculate the threshold level of human capital from which finance becomes harmful to economic growth, finding a threshold of 2.97 years of schooling among individuals above 25 years of age. To the best of our knowledge, no other paper has thus far identified the precise channel through which such non-monotonic relation takes place, and our analysis undoubtedly suggests that human capital does play a key role in this context.

To account for omitted variables and computing channels, we add several types of confounding factors. For instance Columns (3) and (4) adjust the main finding for money growth, trade and government consumption. Again, the sign and significance of the coefficient of interest, namely the interaction term between financial development and human capital, remain unaltered. This confirms that the effect of financial development on growth depends on human capital, as shown in our theoretical model. Additionally, money growth is found to be detrimental to growth, while openness with respect to international trade enhances economic development. However, government consumption has a negative and significant effect on economic growth at the 1% level. Column (5) controls for bank concentration and competition. The introduction of these controls does not change the sign and the significance of the coefficient of interest (the interaction between education and private credit). Interestingly, bank concentration appears to have a negative and significant effect on economic growth, since its coefficient becomes negative and significantly different from 0 at the 1% level, also confirming the finding of Diallo and Koch (2018). Still, the coefficient of financial development squared is equal to zero across all these columns and this confirms the vanishing effect of the inverted-U shaped relationship between financial development and growth found in Arcand et al. (2015). Using institutional variables such as corruption, property and creditor rights as controls (Column 6) does

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not alter our findings. Finally, Column (7) uses the dummy "landlocked" and the measure of a country's latitude as controls for geography. The coefficient for latitude is positive and significantly different from 0 at the 1% level, confirming that countries with higher latitudes are more economically developed. However, our main finding (the nonlinear relationship between finance and growth) remains unchanged, suggesting that in countries that have higher levels of human capital, financial development can be harmful for economic growth. Specifically, our thresholds analysis suggests that human capital levels exceeding between 1.78 to 2.97 years of schooling may make financial development become detrimental to growth.

6 Robustness Checks

In this section, we rely on alternative measures of human capital and financial development, and different samples of countries (OECD versus non-OECD countries) to test the robustness of our findings.

We first use the measure of human capital developed by the World Bank, calculated as the percentage of the population of official secondary education age. We present the results in Table 3 and show that with the use the difference and system GMM estimators, the interaction term between financial development (as measured by private credit) and education becomes negative and significantly different from zero at the 1% level in Column (2), suggesting that the effect of financial development on economic growth is negative in countries that have higher levels of human capital. However, we notice that the magnitude of the interaction is smaller than those obtained via Barro and Lee's measure of education. This finding confirms the results displayed above as well as our theoretical model. Columns (3) and (4) introduce macroeconomic variables as controls and we find that the sign and significance of the coefficient of interest do not change. Banking structure, as proxied by bank concentration and competition, are also used as controls, as displayed in Column (5). Finally, the institutional and geographical variables are introduced in Columns (6) and (7). Our main theory always holds true showing that the effect of financial development on growth through human capital accumulation is nonlinear. In this alternative setting the threshold level of human capital beyond which which financial development becomes harmful to growth ranges from 13.08 to 43.43% of secondary school enrollments out of the population of secondary school age.

Table 3 around here

Alternatively, we use liquid liabilities as a means of measuring of financial development. This acts as a further test of the robustness of our findings. The results are shown in Table 4. First, Column (1) replicates Arcand et al.'s (2015) earlier finding using liquid liabilites as a measure of financial development, showing that its coefficient is equal to zero. Interestingly, the interaction term between financial development measured by liquid liabilities and human capital enters negatively and significantly different from zero at the 1% percent level as shown in Column (2). This validates the main result that is the positive effects of financial development for countries with lower levels of education. The introduction of macroeconomic, banking structure, institutional and geographical variables does not alter this finding.

Table 4 around here

We also use bank assets as a means of measuring financial development instead of private credit. We present the results in Table 5. In the cross-country data section, the interaction of bank assets and human capital (measured by education) becomes negative and significantly different from zero at the 1% level in all columns. This finding gives stronger support to our theory and the empirical results presented above.

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Table 5 around here

Table 6 re-estimates the model by dropping OECD countries. This exercise is done to verify the robustness of the main finding for sample selection bias matters. Specifically, it might be argued that our results are driven by developed countries, which have already accumulated human capital and possess strong financial institutions. Accordingly, we drop OECD countries and show that the main coefficient of interest, namely the interaction between financial development (i.e. private credit) and human capital enters negatively and significantly different from zero at the 1% level. This confirms the positive effects of financial development on economic growth for countries with lower human capital. Finally, we drop both OECD and oil exporting countries in order to deal with outliers and present the results in Table 7. Again, the main finding remains unchanged. In both Table 6 and Table 7 the threshold level for human capital are consistent with the values found in our benchmark framework (Table 2).

Tables 6 and 7 around here

7 Industry-Level Estimates

Even though we have taken care of the endogeneity issues in the panel of country estimations by using the difference and system GMM estimators we continue to test the robustness of our theoretical and empirical models by relying on industry-data. This allows us also to validate our cross-country estimates using industry-level data (Rajan and Zingales, 1998; Arcand et al., 2015). The use of the industry data will help us strengthen our findings and avoid criticisms related to endogeneity in terms of omitted variables or mismeasurement even though we use an approach based on instrumental variables combined with the GMM. The technique deals with industries that are more in need of external finance, specifically, we use the double and triple interactions between external finance, private credit and education. The following econometric equation is estimated:

$$\begin{aligned} VA_{ikt} &= \beta_y SHVA_{ikt} + \beta_f EF_i F_{kt} + \beta_e EF_i Educ_{kt} + \beta_{fe} EF_i F_{kt} Educ_{kt} + \beta_{ff} EF_i F_{kt}^2 + \\ &\quad + \eta_i + \omega_k + X_{ikt} + \varepsilon_{ikt} \end{aligned} \tag{6}$$

where VA_{ikt} is the real value-added growth in aggregate terms in industry i in country k during period t. The convergence effect is captured by the initial share of value-added of industry i over total industrial value-added in country k noted $SHVA_{it}$. EF_i is the measure of external financial dependence for industry i in 1990s. We also add country and industry fixed effects captured by η_i, and ω_k, respectively. The data on industry value-added and external financial dependence are taken from Arcand et al. (2015) and complemented with the United Nations Industrial Development Organizations Database (UNIDO) covering the period 1970-2011.

In column (1) of Table 8 we just replicate the main finding of Rajan and Zingales (1998), namely that the positive impact of financial development on growth for industries that are more dependent on external finance. As shown in this column, the interaction between external finance and private credit enters positively and statistically significantly different from zero at the 1% level, confirming the Rajan and Zingales's main result. Column (2) introduces the interactions between between external financial dependence, private credit and education. The coefficient associated with the interaction term between external financial dependence and education enters strongly positively and significantly differently from zero at the 1% level, suggesting that human capital enhances growth for those industries that are in need of

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external finance. Our coefficient of interest is the triple interaction between external financial dependence, private credit and human capital and it enters negatively and statistically significantly different from zero at the 1% level, suggesting that industries that are more in need of external finance grow more rapidly in countries with lower levels of financial development and education. This finding confirms our theoretical result as well as our empirical estimates using cross-country data. To verify the finding of Arcand et al. (2015) we add the interaction between external financial dependence and square term of private credit, which we find negative but insignificant. Columns (3) and (4) control for macroeconomic and institutional policies captured by money growth, government consumption, trade, corruption, property and creditor rights, respectively. Our coefficient of interest, namely the triple interaction remains unaltered in terms of sign and significance. In columns (5) and (6) the findings are controlled for the banking market structure measured by bank concentration and competition, and geography captured by the dummy variable landlocked and latitude. Again the sign and significance of the triple interaction between external financial dependence, private credit and education remains unchanged, although it is insignificant when bank concentration and competition are taken into account. Finally, following Barro and McCleary (2003) who analyze the effects of religion on economic growth, we use the share of protestants, catholics and muslims which we then interact with financial dependence in order to control for religion in column (7).[14] In all these controls, our coefficient of interest, namely the triple interaction term remains negative and statistically significantly different from zero at the 1% level, suggesting the nonlinear effect of financial development on industry through human capital (i.e. education).

Table 8 around here

Table 9 uses the measure of human capital (i.e. education) taken from the World Bank. Again here our coefficient of interest is the triple interaction term between external financial dependence, private credit and education. In all specifications this coefficient mostly enters negatively and significantly different from zero at the 1% level suggesting the positive impact of financial development on industry growth for industries that are more dependent on external finance and in countries with lower levels of human capital.

Table 9 around here

Finally, Tables 10 and 11 use liquid liabilities and bank assets as measures of financial development, respectively. As expected the triple interaction in both cases enters negatively and significantly different from zero at the 1% level, suggesting that enhances in financial development lead to enhances in industry growth for industries that are more dependent on external finance and in countries with lower levels of human capital.

Tables 10 and 11 around here

8 Conclusion

The positive and negative effects of financial development on economic growth are well-known and documented, and the latest empirical evidence suggests that there may be a bell-shaped relation between growth

[14]The data on religion are made available by the Pew Research Center at: https://www.pewforum.org/.

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and finance, meaning that after a certain threshold further financial development is detrimental for economic growth. Why this is the case is however not clear and none has thus far been able to identify one possible channel through which such effects of financial development on economic growth effectively manifest themselves. We contribute to this literature by investigating whether human capital may be one of these channels. To do so, we analyze a large data set of countries over the period 1970-2011 by relying on a combined instrumental variable and GMM approach to account for the specific role that human capital plays in the growth and finance relation. We show (and our results are robust to a number of controls and robustness checks) that the nonlinear effect of financial development on economic growth is driven by human capital. Specifically, financial development may be harmful to economic growth in countries that have higher levels of human capital, while it may be beneficial in those countries in which human capital is less abundant. Specifically, we find that levels of human capital in the range from 2 to 3 years of schooling attainment (or from 3 to 43 percent of school enrollment) make finance harmful to economic growth.

To the best of our knowledge, this is the first paper able to clearly identify one driver of the non-monotonic growth and finance relation, namely human capital. However, other possible channels, including physical capital and technological progress, may also exist and thus need to be analyzed separately in order to understand whether human capital is the unique or simply one of the drivers of the nonlinear growth and finance nexus. This is left for future research.

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A List of Countries

Albania, Argentina, Armenia, Australia, Austria, Burundi, Belgium, Benin, Bangladesh, Bulgaria, Bahrain, Belize, Bolivia, Brazil, Barbados, Brunei Darussalam, Botswana, Central African Republic, Canada, Switzerland, Chile, China (People's Republic of), Cote d'Ivoire, Cameroon, Democratic Republic of the Congo, Congo, Colombia, Costa Rica, Cyprus, Czech Republic, Germany, Denmark, Dominican Republic, Ecuador, Egypt, Spain, Estonia, Finland, Fiji, France, Gabon, United Kingdom, Ghana, Gambia, Greece, Guatemala, Hong Kong SAR, Honduras, Croatia, Hungary, Indonesia, India, Ireland, Iran (Islamic Republic of), Iraq,

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Iceland, Israel, Italy, Jamaica, Jordan, Japan, Kazakhstan, Kenya, Kyrgyzstan, Cambodia, Republic of Korea, Kuwait, Lao People's Democratic Republic, Liberia, Sri Lanka, Lesotho, Lithuania, Luxembourg, Latvia, Macao SAR, Morocco, Republic of Moldova, Maldives, Mexico, Mali, Malta, Mongolia, Mozambique, Mauritania, Mauritius, Malawi, Malaysia, Namibia, Niger, Netherlands, Norway, Nepal, New Zealand, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Paraguay, Qatar, Romania, Russian Federation, Rwanda, Saudi Arabia, Sudan, Senegal, Singapore, Sierra Leone, El Salvador, Serbia, Sweden, Swaziland, Syrian Arab Republic, Togo, Thailand, Trinidad and Tobago, Tunisia, Turkey, United Republic of Tanzania (Mainland), Uganda, Uruguay, Ukraine, United States, Venezuela, Vietnam, Yemen, South Africa, Zambia, Zimbabwe.

B Variable Definitions

Growth:	Real per-capita GDP growth
Proximity frontier:	Proximity to the world technology frontier (USA) calculated as the maximum of the initial per-capita real GDP to the initial per-capita real GDP of the United States in 1970
Private credit:	Credit provided by the banking sector, including all credit provided to various sectors on a gross basis, with the exception of credit granted to the central government
Bank assets:	Total assets held by deposit money banks as a share of the sum of the claims of deposit money banks and the central bank on the domestic nonfinancial real sector
Liquid liabilities:	Sum of currency and deposits in the central bank (M0); plus electronic currency and transferable deposits (M1); plus currency transferable deposits, securities repurchase agreements, time and savings deposits and foreign certificates of deposit (M2); plus commercial paper travelers' checks, foreign currency time deposits and the share of mutual funds or market funds held by residents
Education (Barro and Lee):	Average of years of schooling of males and females above 25 years of age
Education (World Bank):	Total enrolment in secondary school level education, regardless of age, which is expressed as a percentage of the population of official secondary school age
Money growth:	Average annual growth rate in money
Government consumption:	Government expenditure for purchases of goods and services (including employee compensation) as percentage of GDP
Trade:	Sum of exports and imports in terms of the percentage of GDP
Legal origin:	Dummy variables for a given country's legal system (English, French or German)
Landlocked:	Dummy variable for landlocked countries
Bank concentration:	Share of assets held by the five largest banks in terms of total banking assets
Bank competition:	Lerner index defined as the ratio of the difference between price and marginal cost over price, ranging from 0 to 1, with higher values indicating less competition
Creditor and property rights:	Degree of protection of creditors and ownerships in a given country
Corruption:	Measure of the level of corruption
Value added growth:	Real value added growth of industry i in country k
Financial dependence :	Industry i's dependence on external finance in the 1990s (taken from Rajan and Zingales)

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Table 1: **Summary statistics for cross-country sample**

Variables	**Obs**	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Per-capita GDP growth	1,407	1.378	3.481	-24.560	24.1543
Proximity frontier	1,405	-1.949	1.187	-5.350	1.279
Private credit	1,246	42.757	40.607	1.06	289.2
Liquid liabilities	1,114	50.440	42.029	0.84	370.426
Bank assets	1,114	39.329	37.417	0.41	278.2
Education (Barro and Lee)	1,142	2.237	0.610	1.048	3.618
Education (World Bank)	1,099	18.492	19.849	0	100.099
LegorUK	1,393	0.329	0.470	0	1
LegorFRA	1,393	0.534	0.498	0	1
LegorGER	1,393	0.103	0.304	0	1
M2 growth	1,215	34.917	142.998	-55.160	3240.091
Trade	1,264	81.312	49.994	7.210	440.309
Gov. consump.	1,209	16.107	6.142	2.826	54.375
Bank conc5	476	81.378	15.904	30.12	100
Lerner	509	0.246	0.127	-0.835	0.82
Corruption	1,239	0.0912	1.014	-1.61	2.39
Pty rights	1,226	3.013	1.186	1	5
Creditor rights	1,063	1.757	1.163	0	4
Landlocked	1,402	0.196	0.397	0	1
Latitude	1,402	18.069	24.285	-44.283	64.15

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Table 2: **Growth, Human Capital and Financial development using Barro and Lee's measure of education, private credit and the difference and system GMM method**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.Growth per capita	-0.0832***	-0.0933***	-0.0215**	-0.0579***	-0.0076	0.0075	-0.0811***	0.0012
	(0.0043)	(0.0046)	(0.0101)	(0.0121)	(0.0150)	(0.0087)	(0.0064)	(0.0126)
Proximity frontier	-0.2633***	-0.6373***	-0.4709***	-0.5936***	-0.3406***	-1.0766***	-0.7146***	-0.8875***
	(0.0295)	(0.0170)	(0.0610)	(0.0629)	(0.0391)	(0.0418)	(0.0393)	(0.0760)
Private credit	0.0331***	0.0925***	0.0799***	0.0778***	0.0419***	0.0776***	0.0893***	0.0247***
	(0.0017)	(0.0030)	(0.0049)	(0.0031)	(0.0042)	(0.0042)	(0.0042)	(0.0081)
(Private credit)^2	-0.0002***	-0.0000***	-0.0000	-0.0000	0.0000***	0.0000	-0.0000***	0.0000*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Education (Barro and Lee)		2.4003***	2.3705***	2.3727***	1.7678***	2.6204***	2.3972***	2.2549***
		(0.0686)	(0.0980)	(0.0741)	(0.1009)	(0.1446)	(0.0862)	(0.1792)
Private credit×Education		-0.0297***	-0.0287***	-0.0284***	-0.0189***	-0.0310***	-0.0297***	-0.0158***
		(0.0011)	(0.0015)	(0.0012)	(0.0012)	(0.0025)	(0.0015)	(0.0031)
M2 growth			-0.0025***	-0.0024***				0.0299***
			(0.0001)	(0.0001)				(0.0063)
Trade			0.0032***	0.0051***				0.0015*
			(0.0005)	(0.0004)				(0.0009)
Gov. consump.			-0.0496***					-0.0535***
			(0.0051)					(0.0102)
Bank conc5					-0.0043***			-0.0158***
					(0.0014)			(0.0037)
Lerner					2.1394***			1.9979***
					(0.4617)			(0.4885)
corruption						0.7166***		1.0843***
						(0.1036)		(0.1747)
Prop. rights						-0.1727**		-0.4340***
						(0.0730)		(0.1262)
Creditor rights						0.1584***		0.1263***
						(0.0276)		(0.0435)
Landlocked							-0.0689	-0.2226**
							(0.0785)	(0.1031)
Latitude							0.0096***	0.0126***
							(0.0014)	(0.0022)
Number of obs.	1125	937	837	867	390	760	937	323
Hansen (p-value)	.7666339	.8965538	.9602609	.9299543	.8911891	.9418411	.9282886	.9889803
AR2 (p-value)	.5008497	.4229623	.8330733	.4874279	.2866763	.9017099	.3986113	.5298099
Threshold Financial Development (Private credit, %GDP)	100.81							
Threshold Human Capital (Barro and Lee)		2.97	2.71	2.71	2.29	2.59	2.90	1.78

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions are estimated using the difference and system GMM estimators. Standard errors are in parenthesis.

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Table 3: **Growth, Human Capital and Financial development using the World Bank's measure of school enrolment, private credit and the difference and system GMM method**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.Growth per capita	-0.0832***	-0.0847***	-0.0667***	-0.0489***	-0.0385***	-0.0476***	-0.0760***	-0.0219***
	(0.0043)	(0.0069)	(0.0128)	(0.0084)	(0.0062)	(0.0087)	(0.0081)	(0.0074)
Proximity frontier	-0.2633***	-0.5208***	-0.5409***	-0.4042***	-0.2462***	-0.9596***	-0.6025***	-0.6677***
	(0.0295)	(0.0262)	(0.0483)	(0.0522)	(0.0344)	(0.0740)	(0.0394)	(0.1411)
Private credit	0.0331***	0.0317***	0.0225***	0.0243***	0.0030	0.0195***	0.0328***	-0.0031
	(0.0017)	(0.0022)	(0.0020)	(0.0030)	(0.0025)	(0.0023)	(0.0019)	(0.0066)
(Private credit)^2	-0.0002***	-0.0000	-0.0000	-0.0000	0.0001***	0.0001***	-0.0000***	0.0001
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Education (World Bank)		0.0705***	0.0655***	0.0669***	0.0562***	0.0865***	0.0620***	0.0454***
		(0.0021)	(0.0032)	(0.0029)	(0.0033)	(0.0034)	(0.0020)	(0.0080)
Private credit×Education		-0.0008***	-0.0006***	-0.0007***	-0.0006***	-0.0009***	-0.0007***	-0.0005***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)
M2 growth			-0.0020***	-0.0025***				0.0286***
			(0.0001)	(0.0001)				(0.0073)
Trade			0.0109***	0.0079***				0.0013
			(0.0010)	(0.0012)				(0.0015)
Gov. consump.				-0.0399***				-0.0427***
				(0.0051)				(0.0136)
Bank conc5					-0.0089***			-0.0254***
					(0.0028)			(0.0043)
Lerner					4.2809***			4.8612***
					(0.3412)			(0.6055)
Corruption						0.3251**		0.8511***
						(0.1368)		(0.2081)
Pty rights						0.1901*		-0.1864
						(0.1023)		(0.1735)
Creditor rights						0.1200***		0.1334**
						(0.0211)		(0.0566)
Landlocked							-0.0404	0.0346
							(0.0787)	(0.1947)
Latitude							0.0121***	0.0200***
							(0.0014)	(0.0019)
Number of obs.	1125	890	823	791	325	700	890	266
Hansen (p-value)	.7666339	.8500493	.8886323	.9443456	.9446036	.8814263	.8510561	.9923959
AR2 (p-value)	.5008497	.2758256	.3509871	.4069428	.4702036	.3141191	.3232752	.0822585
Threshold Financial Development (Private credit, %GDP)	100.81							
Threshold Human Capital (School enrolment, % Population, World Bank)		40.49	34.14	34.71	13.08	28.97	43.43	3.60

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions are estimated using the difference and system GMM estimators. Standard errors are in parenthesis.

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Table 4: **Growth, Human Capital and Financial development using Barro and Lee's measure of education, liquid liabilities and the difference and system GMM method**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.Growth per capita	-0.0100**	-0.0166*	0.0055	-0.0266***	-0.0174**	0.0379***	-0.0116	-0.0366**
	(0.0041)	(0.0091)	(0.0159)	(0.0064)	(0.0075)	(0.0139)	(0.0088)	(0.0178)
Proximity frontier	-0.1943***	-0.5831***	-0.7081***	-0.5834***	-0.4755***	-0.8952***	-0.6683***	-0.8461***
	(0.0200)	(0.0425)	(0.0464)	(0.0422)	(0.0568)	(0.0642)	(0.0440)	(0.0904)
Liquid liabilities	0.0139***	0.1222***	0.1170***	0.1169***	0.0861***	0.0988***	0.1181***	0.0670***
	(0.0013)	(0.0028)	(0.0056)	(0.0054)	(0.0054)	(0.0051)	(0.0022)	(0.0093)
(Liquid liabilities)^2	-0.0000***	0.0000***	0.0000***	0.0000	0.0001***	0.0001***	0.0000***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Education (Barro and Lee)		3.0892***	3.0581***	3.0120***	2.8392***	3.1378***	2.9450***	2.8105***
		(0.1167)	(0.1461)	(0.1092)	(0.1131)	(0.1295)	(0.1063)	(0.2039)
Liquid liabilities×Education		-0.0465***	-0.0438***	-0.0427***	-0.0380***	-0.0452***	-0.0447***	-0.0305***
		(0.0016)	(0.0022)	(0.0019)	(0.0014)	(0.0022)	(0.0011)	(0.0030)
M2 growth			-0.0022***	-0.0022***				0.0403***
			(0.0001)	(0.0002)				(0.0076)
Trade			0.0019***	0.0027***				0.0022**
			(0.0007)	(0.0004)				(0.0009)
Gov. consump.				-0.0549***				-0.0334***
				(0.0054)				(0.0107)
Bank conc5					0.0039***			-0.0049
					(0.0014)			(0.0031)
Lerner					1.9175***			1.6037***
					(0.2751)			(0.2548)
Corruption						0.3493***		0.4988***
						(0.0770)		(0.1129)
Pty rights						0.0817		-0.2372**
						(0.0579)		(0.1110)
Creditor rights						0.1582***		0.0815**
						(0.0411)		(0.0310)
Landlocked							-0.0349	-0.1583*
							(0.0528)	(0.0815)
Latitude							0.0081***	0.0125***
							(0.0015)	(0.0020)
Number of obs.	1017	858	797	780	376	708	858	315
Hansen (p-value)	.7369117	.8666482	.9252941	.9512236	.9148654	.9061796	.9121748	.9859682
AR2 (p-value)	.8195366	.9502408	.9883958	.7547454	.2123254	.8836059	.899277	.6718991
Threshold Financial Development (Liquid liabilities, %GDP)	177.28							
Threshold Human Capital (Barro and Lee)		2.72	2.74	2.76	2.45	2.64	2.73	2.44

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions are estimated using the difference and system GMM estimators. Standard errors are in parenthesis.

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Table 5: **Growth, Human Capital and Financial development using Barro and Lee's measure of education, bank assets and the difference and system GMM method**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.Growth per capita	-0.0162***	-0.0099*	-0.0034	-0.0159*	-0.0065	0.0321***	-0.0129*	-0.0014
	(0.0034)	(0.0056)	(0.0081)	(0.0092)	(0.0054)	(0.0083)	(0.0075)	(0.0176)
Proximity frontier	-0.1639***	-0.5312***	-0.6616***	-0.5904***	-0.3088***	-0.9943***	-0.6037***	-0.8569***
	(0.0250)	(0.0334)	(0.0575)	(0.0461)	(0.0515)	(0.0606)	(0.0362)	(0.0761)
Bank assets	0.0229***	0.1079***	0.1056***	0.1043***	0.0585***	0.0989***	0.1060***	0.0461***
	(0.0016)	(0.0048)	(0.0051)	(0.0055)	(0.0044)	(0.0037)	(0.0066)	(0.0090)
(Bank assets)^2	-0.0001***	-0.0000***	-0.0000	-0.0000***	0.0000***	0.0000	-0.0000**	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Education (Barro and Lee)		2.3996***	2.5406***	2.5137***	1.9284***	2.4558***	2.3202***	2.3672***
		(0.0638)	(0.1129)	(0.0998)	(0.0582)	(0.0988)	(0.1136)	(0.1789)
Bank assets×Education		-0.0379***	-0.0381***	-0.0367***	-0.0266***	-0.0374***	-0.0375***	-0.0219***
		(0.0013)	(0.0019)	(0.0019)	(0.0012)	(0.0013)	(0.0023)	(0.0032)
M2 growth			-0.0022***	-0.0023***				0.0320***
			(0.0002)	(0.0002)				(0.0059)
Trade			0.0043***	0.0037***				0.0016
			(0.0006)	(0.0004)				(0.0012)
Gov. consump.				-0.0442***				-0.0515***
				(0.0051)				(0.0103)
Bank conc5					0.0020**			-0.0022
					(0.0010)			(0.0032)
Lerner					1.7892***			2.2308***
					(0.4342)			(0.6166)
Corruption						0.5140***		0.8622***
						(0.0871)		(0.1380)
Pty rights						-0.0482		-0.3893***
						(0.0690)		(0.1074)
Creditor rights						0.1999***		0.1740***
						(0.0361)		(0.0396)
Land locked							0.1624**	-0.1306
							(0.0797)	(0.1095)
Latitude							0.0106***	0.0133***
							(0.0010)	(0.0021)
Number of obs.	1014	856	795	778	376	702	856	311
Hansen (p-value)	.791145	.8995324	.9184711	.9478408	.8834414	.9082789	.8362978	.9925816
AR2 (p-value)	.7949668	.726731	.8823704	.9997305	.3605549	.8651946	.7443846	.7434185
Threshold Financial Development (Bank assets, %GDP)	85.37							
Threshold Human Capital (Barro and Lee)		2.80	2.74	2.79	2.30	2.66	2.78	2.20

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions are estimated using the difference and system GMM estimators. Standard errors are in parenthesis.

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Table 6: **(non-OECD countries only)—Growth, Human Capital and Financial development using Barro and Lee's measure of education, private credit and the difference and system GMM method**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.Growth per capita	-0.0827***	-0.0761***	-0.0477***	-0.0085	-0.0034	0.0153	-0.0737***	-0.0027
	(0.0052)	(0.0072)	(0.0120)	(0.0103)	(0.0065)	(0.0124)	(0.0072)	(0.0200)
Proximity frontier	-0.2553***	-0.6754***	-0.8097***	-0.5053***	-0.3735***	-1.1082***	-0.7384***	-0.9716***
	(0.0180)	(0.0467)	(0.0911)	(0.0661)	(0.0436)	(0.0822)	(0.0710)	(0.1398)
Private credit	0.0344***	0.0961***	0.1109***	0.1102***	0.0631***	0.0817***	0.1075***	0.0143
	(0.0020)	(0.0041)	(0.0071)	(0.0072)	(0.0083)	(0.0076)	(0.0048)	(0.0172)
(Private credit)^2	-0.0001***	-0.0000*	0.0000	0.0000	0.0000***	0.0001***	-0.0000***	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Education (Barro and Lee)		2.4675***	2.6642***	2.6039***	2.1396***	2.7550***	2.3687***	2.6445***
		(0.1352)	(0.1132)	(0.0914)	(0.1200)	(0.1380)	(0.1373)	(0.3181)
Private credit×Education		-0.0325***	-0.0413***	-0.0410***	-0.0285***	-0.0381***	-0.0353***	-0.0185***
		(0.0017)	(0.0030)	(0.0025)	(0.0029)	(0.0031)	(0.0017)	(0.0067)
M2 growth			-0.0023***	-0.0025***				0.0226***
			(0.0002)	(0.0001)				(0.0064)
Trade			0.0071***	0.0049***				-0.0010
			(0.0009)	(0.0006)				(0.0017)
Gov. consump.				-0.0563***				-0.0346*
				(0.0094)				(0.0181)
Bank conc5					-0.0010			-0.0085*
					(0.0017)			(0.0049)
Lerner					3.2835***			2.8596***
					(0.3667)			(0.5959)
Corruption						0.9747***		0.8754***
						(0.1460)		(0.2992)
Pty rights						-0.1227		-0.3104*
						(0.1106)		(0.1720)
Creditor rights						0.2407***		0.1405***
						(0.0540)		(0.0463)
Landlocked							0.0198	-0.4090**
							(0.0834)	(0.1991)
Latitude							0.0141***	0.0166***
							(0.0013)	(0.0025)
Number of obs.	944	756	726	696	306	595	756	250
Hansen (p-value)	.7662258	.8893347	.9451011	.9599674	.9612144	.937253	.9131757	.9942683
AR2 (p-value)	.5366252	.4233652	.5157466	.853023	.1546311	.6999331	.4244726	.4274684
Threshold Financial Development (Private credit, %GDP)	124.58							
Threshold Human Capital (Barro and Lee)		2.92	2.70	2.68	2.31	2.35	2.99	1.43

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions are estimated using the difference and system GMM estimators. Standard errors are in parenthesis.

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Table 7: **(Dropping oil exporting and OECD countries)–Growth, Human Capital and Financial development using Barro and Lee's measure of education, private credit and the difference and system GMM method**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.Growth per capita	-0.0768***	-0.0711***	-0.0428***	0.0072	0.0201**	0.0544***	-0.0505***	0.0376**
	(0.0062)	(0.0080)	(0.0124)	(0.0116)	(0.0099)	(0.0139)	(0.0159)	(0.0159)
Proximity frontier	-0.0427**	-0.5698***	-0.6559***	-0.4913***	-0.0700	-0.8523***	-0.6191***	-0.5500***
	(0.0188)	(0.0677)	(0.0716)	(0.0645)	(0.0611)	(0.0924)	(0.0740)	(0.1676)
Private credit	0.0273***	0.1035***	0.1139***	0.1162***	0.0614***	0.0679***	0.1053***	0.0347*
	(0.0024)	(0.0034)	(0.0063)	(0.0088)	(0.0060)	(0.0100)	(0.0082)	(0.0203)
(Private credit)^2	-0.0001***	-0.0000*	0.0000***	0.0000*	0.0001***	0.0002***	-0.0000	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Education (Barro and Lee)		2.3998***	2.6542***	2.5991***	1.9215***	2.4196***	2.2395***	2.0232***
		(0.1234)	(0.1082)	(0.0904)	(0.0621)	(0.1819)	(0.1323)	(0.3490)
Private credit×Education		-0.0357***	-0.0442***	-0.0438***	-0.0309***	-0.0370***	-0.0365***	-0.0280***
		(0.0013)	(0.0023)	(0.0029)	(0.0020)	(0.0033)	(0.0031)	(0.0069)
M2 growth			-0.0024***	-0.0027***				0.0225**
			(0.0002)	(0.0002)				(0.0090)
Trade			0.0061***	0.0043***				0.0008
			(0.0009)	(0.0006)				(0.0020)
Gov. consump.				-0.0596***				0.0064
				(0.0081)				(0.0278)
Bank conc5					-0.0000			-0.0072
					(0.0018)			(0.0055)
Lerner					3.6907***			4.2416***
					(0.1481)			(0.4281)
Corruption						0.9944***		0.7478**
						(0.1580)		(0.3736)
Pty rights						-0.2579**		-0.3350
						(0.1271)		(0.2443)
Creditor right						0.3493***		0.2712***
						(0.0521)		(0.0821)
Landlocked							-0.0147	-0.3210
							(0.0947)	(0.2602)
Latitude							0.0142***	0.0159***
							(0.0012)	(0.0019)
Number of obs.	880	704	684	662	287	555	704	239
Hansen (p-value)	.777472	.8888835	.9548677	.9665126	.9570607	.9752329	.9181268	.996211
AR2 (p-value)	.4590014	.3716292	.9987205	.5942781	.2293715	.6999455	.3406366	.4246086
Threshold Financial Development (Private credit, %GDP)	113.17							
Threshold Human Capital (Barro and Lee)		2.87	2.62	2.67	2.14	2.13	2.87	1.68

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions are estimated using the difference and system GMM estimators. Standard errors are in parenthesis.

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Table 8: **Industry Growth, Human Capital, Financial Development and External Financial Dependence**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share initial value added	-208.3518***	-205.8248***	-166.0739***	-320.2228***	-271.4331***	-206.8502***	-202.8816***	-327.1039***
	(27.5089)	(28.3211)	(27.6363)	(28.8394)	(51.8901)	(28.2886)	(28.2397)	(55.8408)
EF×Private credit	0.0171***	0.1772***	0.1426***	0.1888***	0.1023*	0.1863***	0.1657***	0.1562**
	(0.0034)	(0.0321)	(0.0406)	(0.0328)	(0.0597)	(0.0336)	(0.0321)	(0.0688)
EF×Education (Barro and Lee)		4.6320***	3.7712***	4.5029***	1.9705	4.7785***	4.8990***	1.6296
		(0.7260)	(0.7912)	(0.7482)	(1.4629)	(0.7211)	(0.7255)	(1.8253)
EF×Private credit×Education		-0.0534***	-0.0412***	-0.0691***	-0.0319	-0.0553***	-0.0466***	-0.0406
		(0.0137)	(0.0156)	(0.0144)	(0.0240)	(0.0145)	(0.0136)	(0.0280)
EF×(Private credit)^2		-0.0001	-0.0001	0.0000	0.0000	-0.0001*	-0.0002**	-0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
EF×M2 growth			0.0016					0.0233
			(0.0097)					(0.0236)
EF×Gov. consump.			-0.0003					-0.0667
			(0.0365)					(0.1114)
EF×Trade			0.0129***					0.0066
			(0.0028)					(0.0082)
EF×Creditor rights				-0.1913				-0.8754**
				(0.1346)				(0.3957)
EF×Pty rights				1.6387***				1.2246
				(0.3526)				(1.0148)
EF×Corruption				-0.8708**				-0.7626
				(0.3427)				(1.0917)
EF×Bank conc.					0.0973			0.0488
					(0.0687)			(0.0298)
EF×Lerner index					2.2864			4.5563
					(3.3952)			(4.4364)
EF×Latitude						-0.0047		-0.0125
						(0.0093)		(0.0234)
EF×Landlocked						-4.3831***		-3.2169
						(0.9962)		(2.1693)
EF×Catholic							-0.0214***	-0.0172
							(0.0052)	(0.0136)
EF×Protestant							-0.0183***	0.0038
							(0.0064)	(0.0204)
EF×Muslim							-0.0034	-0.0255
							(0.0064)	(0.0158)
Number of obs.	11639.000	11370.000	10064.000	10321.000	3181.000	11370.000	11370.000	2712.000
R^2	.3296569	.3346336	.3468048	.355448	.3073891	.3367647	.3356758	.3246275
Country and Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions contain the constant coefficient. Standard errors are in parenthesis.

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Table 9: **Industry Growth, Human Capital, Financial Development and External Financial Dependence**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share initial value added	-208.3518***	-264.1630***	-218.3450***	-364.1475***	-351.4395***	-265.4352***	-262.2367***	-422.7382***
	(27.5089)	(34.6739)	(34.6854)	(36.7508)	(66.2124)	(34.6787)	(34.5913)	(70.2482)
EF×Private credit	0.0171***	0.0819***	0.0762***	0.0462***	0.0675**	0.0761***	0.0882***	0.0688
	(0.0034)	(0.0132)	(0.0203)	(0.0137)	(0.0279)	(0.0130)	(0.0133)	(0.0494)
EF×Education (World Bank)		0.1033***	0.0909***	0.0492**	0.1276***	0.0672***	0.1004***	0.1143*
		(0.0208)	(0.0227)	(0.0245)	(0.0458)	(0.0242)	(0.0244)	(0.0604)
EF×Private credit×Education		-0.0015***	-0.0013***	-0.0008***	-0.0017***	-0.0013***	-0.0015***	-0.0010
		(0.0002)	(0.0003)	(0.0003)	(0.0005)	(0.0003)	(0.0003)	(0.0007)
EF×(Private credit)^2		-0.0001*	-0.0001*	-0.0001*	-0.0000	-0.0001**	-0.0002***	-0.0002
		(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
EF× M2 growth			-0.0055					0.0133
			(0.0106)					(0.0206)
EF×Gov. consump			0.0056					-0.0041
			(0.0411)					(0.1274)
EF×Trade			0.0073					0.0137
			(0.0051)					(0.0132)
EF×Creditor rights				-0.3208**				-1.0088***
				(0.1263)				(0.3779)
EF×Prop. rights				1.2940***				0.3505
				(0.3900)				(1.1569)
EF×Corruption				-0.5445				-0.4191
				(0.3812)				(1.4710)
EF×Bank conc					-0.0471			0.0164
					(0.0925)			(0.0290)
EF×Lerner index					-1.3379			2.2966
					(3.9752)			(4.9507)
EF×Latitude						0.0305**		0.0225
						(0.0119)		(0.0325)
EF×Landlocked						-1.5528*		-2.0283
						(0.8775)		(2.2056)
EF×Catholic							-0.0157**	-0.0233
							(0.0064)	(0.0162)
EF×Protestant							-0.0069	-0.0257
							(0.0076)	(0.0226)
EF×Muslim							-0.0136*	-0.0267*
							(0.0071)	(0.0161)
Number of obs.	11639.000	8845.000	7684.000	8012.000	2253.000	8845.000	8845.000	1858.000
R^2	.3296569	.3536644	.3640469	.3745193	.3375016	.3548131	.3539919	.3581204
Country and Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions contain the constant coefficient. Standard errors are in parenthesis.

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Table 10: **Industry Growth, Human Capital, Financial Development (liquid liabilities) and External Financial Dependence**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share initial value added	-205.8038***	-204.3942***	-167.3858***	-323.3669***	-262.5905***	-205.0938***	-201.3171***	-329.6124***
	(27.6295)	(28.6173)	(27.8828)	(29.1497)	(52.1904)	(28.5911)	(28.4829)	(56.2227)
EF×Liquid liabilities	0.0177***	0.1939***	0.1101**	0.2225***	0.1579*	0.1988***	0.1911***	0.1927*
	(0.0036)	(0.0359)	(0.0554)	(0.0354)	(0.0816)	(0.0371)	(0.0362)	(0.1099)
EF×Education (Barro and Lee)		5.4364***	3.4293***	6.4748***	3.8274*	5.6596***	6.1472***	4.7614*
		(0.9774)	(1.2297)	(0.9992)	(2.1356)	(0.9750)	(1.0368)	(2.7862)
EF×Liquid liabilities×Education		-0.0638***	-0.0306	-0.1013***	-0.0545	-0.0665***	-0.0658***	-0.0800*
		(0.0170)	(0.0220)	(0.0167)	(0.0340)	(0.0177)	(0.0171)	(0.0432)
EF×(Liquid liabilities)^2		-0.0000	-0.0001	0.0003***	0.0001	-0.0000	-0.0000	0.0002
		(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
EF× M2 growth			0.0006					0.0204
			(0.0099)					(0.0248)
EF×Gov. consump.			0.0005					0.0057
			(0.0352)					(0.1164)
EF×Trade			0.0138***					0.0099
			(0.0034)					(0.0093)
EF×Creditor rights				-0.0594				-0.6301
				(0.1376)				(0.4062)
EF×Pty. rights				1.7281***				1.5342
				(0.3397)				(0.9658)
EF×Corruption				-0.9179***				-0.7884
				(0.3414)				(1.0184)
EF×Bank conc					0.0891			0.0300
					(0.0645)			(0.0287)
EF×Lerner index					2.3379			4.0759
					(3.4107)			(4.5781)
EF×Latitude						-0.0040		-0.0187
						(0.0090)		(0.0238)
EF×Landlocked						-3.9676***		-2.8313
						(1.0152)		(2.1808)
EF×Catholic							-0.0158***	-0.0079
							(0.0050)	(0.0131)
EF×Protestant							-0.0133**	-0.0006
							(0.0063)	(0.0211)
EF×Muslim							0.0006	-0.0143
							(0.0069)	(0.0160)
Number obs.	11527.000	11258.000	10064.000	10218.000	3141.000	11258.000	11258.000	2712.000
R^2	.330282	.3350946	.3460994	.3558211	.3102645	.3367507	.335678	.3236447
Country and Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions contain the constant coefficient. Standard errors are in parenthesis.

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Table 11: **Industry Growth, Human Capital, Financial Development (bank assets) and External Financial Dependence**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share initial value added	-203.8367***	-201.0149***	-164.8883***	-319.2351***	-255.2852***	-201.9484***	-197.5278***	-328.7187***
	(27.5126)	(28.3183)	(27.6551)	(28.8315)	(52.3641)	(28.2864)	(28.2258)	(55.8637)
EF×Bank assets	0.0162***	0.1957***	0.1544***	0.2089***	0.0971	0.2049***	0.1883***	0.1498**
	(0.0036)	(0.0358)	(0.0463)	(0.0368)	(0.0621)	(0.0369)	(0.0354)	(0.0760)
EF×Education (Barro and Lee)		5.0717***	4.0460***	4.9770***	2.0547	5.1589***	5.4227***	2.4172
		(0.7540)	(0.8317)	(0.7805)	(1.4803)	(0.7453)	(0.7573)	(1.8439)
EF×Bank assets×Education		-0.0631***	-0.0472***	-0.0871***	-0.0316	-0.0645***	-0.0554***	-0.0498
		(0.0159)	(0.0183)	(0.0166)	(0.0257)	(0.0167)	(0.0158)	(0.0306)
EF×(Bank assets)^2		-0.0001	-0.0001	0.0002*	0.0000	-0.0001	-0.0002**	-0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
EF×M2 growth			0.0015					0.0216
			(0.0098)					(0.0237)
EF×Gov. consump.			0.0018					-0.0161
			(0.0367)					(0.1110)
EF×Trade			0.0140***					0.0095
			(0.0028)					(0.0085)
EF×Creditor rights				-0.0890				-0.7205*
				(0.1388)				(0.4037)
EF×Pty. rights				1.7994***				1.5506
				(0.3550)				(1.0380)
EF×Corruption				-0.8911**				-0.8652
				(0.3492)				(1.0777)
EF×Bank conc					0.0877			0.0353
					(0.0681)			(0.0296)
EF×Lerner index					3.6097			4.5620
					(3.3577)			(4.5628)
EF×Latitude						-0.0042		-0.0175
						(0.0092)		(0.0234)
EF×Landlocked						-4.3481***		-2.9409
						(1.0308)		(2.1847)
EF×Catholic							-0.0233***	-0.0143
							(0.0053)	(0.0134)
EF×Protestant							-0.0219***	0.0007
							(0.0066)	(0.0202)
EF×Muslim							-0.0029	-0.0202
							(0.0065)	(0.0164)
Number of obs.	11466.000	11197.000	10033.000	10157.000	3079.000	11197.000	11197.000	2712.000
R^2	.3300045	.3351791	.3463273	.3562657	.3110064	.337188	.3364827	.3239528
Country and Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note that (***, ** and *) indicate significance at the 1%, 5% and 10% levels, respectively. All regressions contain the constant coefficient. Standard errors are in parenthesis.

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