Intro

Following the research done by King and Levine (1993), we look to delve deeper into the finance and growth relationship. Through proving, and thus using more statistically sound instrumental variable and OLS techniques, we take advantage of the most up to date data, looking to see if finances effect on growth still exists. We will also look at the relationship between finance and growth when considering the financial crash of 2008, segmenting regressions around this break. Finally we move to the relationship between finance and inequality, looking to find a different perspective on the role of finance in today's society. We start by looking at the theory of why finance could cause growth (section 2.1), then moving onto to the literature and the empirical evidence shown through other research (section 2.2). Finally we will set up our econometric regression techniques (section 3.1), proving their validity, before running them to find the current relationship between finance and growth (section 3.2).

2.1 Theory

We start by looking at Levine (1997), who succinctly provides reasoning through 4 channels to how finance could cause growth. He outlines the need for finance due to savers looking to invest, and entrepreneurs and owners looking to enter markets. Through bringing these two sides together, it is likely that capital efficiency and accumulation will increase, as investors want the highest return possible, with the most productive firms providing that. Levine (1997) describes two reasons stopping the connection between investors and entrepreneurs: information costs and transaction costs. Savers are unlikely to forgo their money when the understanding of a business or the transferring of money come at a high cost. The development of financial institutions look to alleviate these costs in the form of financial intermediaries and markets. Financial intermediaries are institutions that collate savers money, using their size and knowledge to economize the investment process and efficiently allocate resources to the most productive individuals. Financial markets help the fluid trading of stocks, bonds, equities and more. Overall, he establishes that financial development creates better allocation of resources, leading to an increase in capital and innovation, both determinants of increased growth in the Solow growth model (week 1, intermediate macroeconomics). The first channel looked at by Levine (1997) is financially developed economies ability to reduce risk. This comes in two forms: liquidity and idiosyncratic. Reducing risk is

imperative for an economy as usually long-term projects are much riskier than short term ones. These long-term projects garner the most potential through productivity and innovation, both established causes of economic growth. Low information costs and transaction costs help reduce these risks. Liquidity is the speed in which an asset can be turned into something of monetary value. Liquid financial markets reduce market frictions. Investing in long term projects can be risky as one investor cannot verify that the others will not receive a shock and must take their money out, killing the project. This asymmetric information means investors cannot insure themselves against another individual defaulting, resulting in an information cost that makes investing in a long illiquid projects too risky (Levine, 1997). A developed capital market that enables assets to be traded easily, increases liquidity, resulting in the project maintaining investment through its life. This is necessary for an investments payoff to outweigh the risk. Furthermore, financially developed markets with low transaction costs increase liquidity. The necessary trading of ownership can only happen if the cost of exchange is not too high. Financial intermediaries also decrease liquidity risk. Through amalgamating savings, they can invest money into a range of short-term and long-term projects with various liquidity. This guarantees savers constant access to part some of their money through liquid deposit slips, while still providing investment to high return projects. Financial development also provides dampening to idiosyncratic risk. Longer term projects tend to be risker due to the lack of a certain planning horizon. Additionally, projects that offer high returns, therefore productivity and innovation, will be paired with higher risk of failure. A market that reduces frictions and facilitates trade helps investors hold a diversified portfolio, allowing for investment in the most promising projects with decreased risk. Overall, both reductions of risk filter through to economic growth.

The second channel explored is financial intermediaries' ability to obtain knowledge on potential investments and allocate resources to those productive operations. This comes from a reduction in information cost. Without financial development, each investor would have to do their own due diligence. This is costly and time consuming, making the prospect of investing less beneficial. Savers would either not look to invest as they do not have the level of information about a project to risk their money, or investment in a less efficient use of those resources. Financial intermediaries can reduce information cost by economizing the research process. This means that one institution is doing the research for all the

savers who keep their money with them, cutting the cost per individual dramatically. Through amalgamating savings, financial intermediaries can allocate those resources much more efficiently as they can investigate all types of investment and choose the best ones. As financial development increases, financial intermediaries' ability to collect information on investments improves, meaning better allocation. This pushes capital accumulation and innovation as the economy can more precisely find the firms that will do so, as these firms will also offer the highest returns.

The third channel in which financial development leads to increased and more efficient investment is allowing for easier routes through which investors can oversee management and align those interest of the managers with the investor. As explained before, it is costly to verify the return of a project. One way of navigating this information cost is to set up a debt contract. This is where the lender gives the money to the borrower, expecting it back plus an optimal rate of interest for both sides (r). An issue arises when the borrower defaults on this loan, meaning the lender must spend more time and effort looking into what is going wrong. This information cost will decrease investment as higher investment comes with more risk and increased monitoring costs. As a country becomes more financially developed, contracts become more versed and succinct, tightening the relationship between the lender and investor. This will lead to reduced information cost and increased investment.

Financial intermediaries have a large effect on investors ability to monitor their investments and keep them in control. As shown before, financial intermediaries can economize the acquisition of information, in which the same can be done for management monitoring. Firstly, the information cost is heavily decreased as banks can manage many operations at a fraction of the price of an individual. As explained before, this reduction in information cost reduces risk and monitoring costs. Secondly, due to their being a middle manager between the firm and investor, specialization can occur. Intermediaries can employ field experts to manage many firms in similar markets. This in turn leads to those being managed under the specialists to be much more efficient than previously. The investor will still need to monitor the bank. This is easily done through verifying that the bank is holding a risk diverse investment portfolio for the saver, which guarantees it will always be able to pay the deposit interest rate (r).

Levine's fourth channel is financially developed systems ability to "mobilize savings". This comes through bringing together savings to create a large pot for investment. This will help all firms achieve economies of scale, as some projects would need investment beyond that of an individual to achieve maximum efficiency. Furthermore, this amalgamation of savings mitigates savers from having to purchase entire projects, allowing for parts of their savings to be invested in a variety of projects, leading to a diverse portfolio and decreased liquidity risk as stated before. A developed financial system will help overcome the transaction costs associated with gathering savings from others, and the informational asymmetries that lead to savers not wanting to invest their money. This information cost can be dampened by a financial systems ability to set up strong bilateral contracts between crowd funders and savers, allowing for investment to take place at a reduced risk. Financial intermediaries can reduce transaction costs by economizing the process of setting up these contracts. Overall, a financial systems ability to mobilize savings leads to a decrease in risk for investors, while providing investment to all project types, especially high capital requiring ones. This availability of investment for firms will further lead to increased investment to the most productive, efficient and innovative firms.

Pagano (1993) further shows how financial development can lead to economic growth. The derivation starts with the standard "AK" model where:

$$Y_t = AK_t \quad (1)$$

In this economy there is one good that is produced, which can either be invested or consumed. While also keeping the population constant, the level of investment can be seen as the difference between capital in one future period and the current period, while considering the depreciation of capital at rate δ. This can be written down as:

$$I_t = K_{t+1} - (1 - \delta)K_t \quad (2)$$

In an economy with no trade and government spending, investment will be equal to gross savings, while allowing for savings to be lost through the cost of financial intermediation. This is equal to 1-φ. Therefore:

$$\varphi S_t = I_t \quad (3)$$

Finally, through looking at the growth rate equation of (1), $g_{t+1} = \frac{Y_{t+1}}{Y_t - 1} = \frac{K_{t+1}}{K_t - 1}$, and using (2) and (3) with the time indices dropped, the steady state growth rate in this hypothetical economy can be written as:

$$g = A\frac{I}{Y} - \delta = A\varphi\frac{S}{Y} - \delta = A\varphi s - \delta \quad (4)$$

Where s is the gross saving rate. This equation shows three avenues in which financial development can affect economic growth. φ reflects a financial systems ability to turn savings into investment. Where φ is low, this is due to high commissions, fees, inefficient services, high amounts of red tape and a lack of financial development. Where financial market power is high, this will result in a low φ as premium services are not required to earn customers. On the contrary, a highly competitive financially developed market will cause an increase in φ, which as seen through equation (4), will lead to an increase in the steady state growth rate.

Levine's (1997) 5 channels reflect how financial development can alter the level of A. As shown before through developed financial intermediation and markets, savings are directed toward the most productive and innovative projects. These projects have the highest marginal product of capital, and therefore push the level of A up, further increasing steady state growth. However, Pagano (1993) does delve into the vague way in which financial development affects saving rates. As shown before, financial development decreases risk. As this risk decreases, the need for "precautionary saving" decreases. This will cause consumption to increase and saving to decrease. Furthermore, liberal credit markets will lend money from savers to dissavers through loans and debts. If households are not credit constrained, this will lead to saving decreasing along with the growth rate. Yet, if this consumption is paired in investment into human capital in economies where government funded schooling or university loans, plus on the job learning is not readily available, it could also lead to an increase in A. Finally, as described before when financial market competition is low, interest rates will be below that of the perfect competition equilibrium. As saving rates follow the level of interest, a financially undeveloped system will decrease the level of s, with the opposite increasing s.

Overall Pagano (1993) adds to Levine's (1997) theory of financially development leading to economic growth though increases in both φ and A, while still incorporating the ambiguous affect it has on s.

To create an empirically sound framework to understand the effect financial development has on economic growth, the historical origins of why some countries are financially developed and others are not needs to be explored. Two theories stemming from colonialism of Britain and France look to explain these differences. The first is the legal origins of a country. As Britain and France expanded across the world, they brought their legal traditions with them. These two traditions garnered very different foundations for financial development to flourish. British common law formed around giving power to judges, which allowed for case-to-case solutions to disputes and protection of assets from the crown (Beck et al, 2003). This protection allowed for transactions to take place with no interference from the state, allowing for the need of financial development to support these transactions. On the contrary, French civil law was formed around taking power away from judges and giving it to the state. This meant that where the British common law allowed for the markets to evolve naturally and reach optimality, the French civil law gave the power to the state to manipulate markets towards being most productive to them. As shown via Pagano's (1993) theory, a free competitive financial market is necessary to maximise growth, meaning French civil law was worse at promoting financial development compared to the British common law.

The second theory that tends toward the origin of financial development within a country is the "endowment theory". Beck et al (2003) looks at the settler mortality of colonizers as they came to a country. Due to the physical geography of a country, some caused high amounts of deaths for European settlers while others garnered the conditions for them to live. This set up two very different types of colonization. Where these settlers could live, foundations and law were set up to encourage the development of institutions. This can be seen through Australia, New Zealand and the USA where settlers set up law that benefited their planning horizons. The opposite is of countries with high mortality rates. As it was not achievable to remain in these countries, extractive institutions and laws were set up to maximise the benefits of the colonizers and went against the existence of property rights and free markets that push financial development. As these countries gained independence, the governments inherited these institutions that funnelled wealth to the elite, maintaining these "extractive states" and forming a poor groundwork for future financial development.

2.2 Literature Review

The literature on the fin-dev growth question looks to answer the following; whether financial development drives economic growth, using econometric methods that allow the argument of causality, and through which channels that this growth is created. De Gregorio (1995) extended King and Levine's (1993) argument through showing a positive impact from finance to growth, but how it is not heterogenous across time, regions and income levels. De Gregorio (1995) further broke down the argument through looking at whether fin-dev increases the amount of investment, the efficiency of investment or both. De Gregorio used cross sectional data on 100 countries from 1960-1985, estimating this data using an OLS technique. He found that the relationship between financial development and growth was significant, with the strongest coming in low- and middle-income countries, with 75% of the impact on growth coming from increased efficiency of investment, with the other 25% coming from a volume increase. De Gregorio (1995) further extended his analysis of the relationship by using panel data from 1950-1985 from 12 Latin countries. These provided a different tale to the fin-dev story as Latin America had experienced persistent financial crashes due to over liberalization through this period. The panel regressions with random effects showed financial development to have a negative impact in this region, hypothesizing that financial development with insufficient regulation does not create economic growth. Rajan and Zingales (1998), and Kroszner et al (2007) further extend upon these findings. Rajan and Zingales (1998) add to the positive effect of fin-dev on growth side of De Gregorio's (1995) paper. They attempt to add to the causal debate of fin dev by showing that industries that depend on external finance grow disproportionally faster in countries with more developed financial systems, refuting the view that finance follows growth. Like De Gregorio (1995), they use cross sectional data and OLS to estimate their hypothesis. They further control for bias using an instrumental variable, along with country and industry fixed affects. The data spans from 1980-1990 and looks at 41 different countries. Due to Rajan and Zingale's (1998) belief that the technological reasons that one industry is more reliant on external finance than others are consistent across countries, they use the US as a proxy for the estimation of each industries dependence on external finance. They estimate the relationship by looking at the interaction term of country financial development and industry external finance dependence on value

added by the specific sector to the country. The paper finds that industries such as drugs and pharmaceuticals which need finance grow faster than less finance dependent industries such as tobacco by 4% in developed, 3% in moderately developed and -2.5% rate in undeveloped financial systems. This shows that finance can push growth through the "credit-channel", where firms in need of finance are able to grow. This is supported by the theory that industries with many new firms are both more dependent on finance and more innovative due to competition. Finance can assist these new firms and push economic growth. Kroszner et al (2007) use the specification in Rajan and Zingale's (1998) paper to look at the effect of financial crises on these externally dependent industries. They do this in two ways; the first using the specification and looking at value added by an industry before, during and after a crisis, with the second looking at the change in value added over the crises period. They use data from 38 developing and developed countries that have experienced financial crashes over the 25 years before 2007. They find that firms more reliant on external finance are more likely to experience large contractions during a financial crisis. This is exemplified by the data showing the 75th percentile industry of finance dependence in the 75th percentile of country financial development would experience a 1.6% larger contraction than an industry at the 25th percentile of financial dependence in a country at the 25th percentile of financial development. Kroszner et al (2007) do preference however that firms would still be better off in a financially deeper system even in the existence of a financial crash, providing a differing proposition to De Gregorio (1995).

As the finance growth literature developed, researchers turned to the more nuanced panel data. Panel data allows one to control for country and year specific affects, helping to mitigate endogeneity while showing the dynamic effect of finance of growth. These next 3 papers make use of this form of data to answer the questions of whether the relationship exists, is there a threshold and whether financial structure matters. Jerzmanowski (2017) looks at banking deregulation in US states from the mid-70's to mid-90's to estimate the effect of better finance on growth. New data allowed the decomposition of growth into capital accumulation (both physical and human) and total factor productivity (TFP). This gives a strong basis for a causal link, as deregulation of the banking system leads to increased competition and improved intermediation. Using an OLS with fixed affects and a GMM method while using controls for initial GDP,

state specific time trends and more, Jerzmanowski (2017) estimates the effect of changes in financial development on the decomposed form of growth. He found that banking deregulation increased output per worker growth by 1 percentage point. This increase in TFP was paired with an increase in capital accumulation, with no sign of an increase in human capital accumulation. Furthermore, both poor and rich states grew the same after deregulation, meaning the results were not skewed by a "convergence affect". Most importantly the paper shows that finance doesn't create growth through only growth in its own sector, as it finds that the increase in TFP lead to the manufacturing industry growing, supporting the theory that finance increases allocation and innovation. Law and Singh (2014) look to find whether there is a threshold amount of finance that is beneficial toward economic growth. This is an important policy perspective that would not be found in other regressions unless controlled for as it would imply a nonlinear relationship. Through using 87 countries from 1980 to 2010, Law and Singh (2014) use dynamic threshold method to first calculate if there is a threshold, and if so, what level it is. They then estimate the effect of financial development on growth above and below the threshold. They use an OLS to estimate the threshold amount of financial development, which show tipping point levels of private sector credit to GDP of 94%, liquid liabilities to GDP of 97%, and domestic credit to GDP of 100%. They then implement a GMM estimator to show that below these levels, financial deepening of a system leads to economic growth, whereas above it leads to a contraction. An example of this is at the mean level of private credit, a 1% increase would lead to a 0.066 increase in percentage growth, whereas at the maximum levels of private credit, this results in 0.067 decrease in percentage growth. Finally, Ndikumana (2005) uses panel data to look at whether the structure of a financial system is relevant toward its level of development being a catalyst for economic growth. Ndikumana (2005) categorises countries into 4 categories; developed bank-based, developed market-based, undeveloped bank-based and undeveloped market-based. He takes data from 99 developed and developing countries from 1965-97, implementing both OLS and panel methods to estimate results. In the OLS he uses an IV of legal origins, something we will do further on in this paper, while in the panel method, lagged levels of financial development are used as an IV, while still controlling for year and country fixed effects to mitigate from endogeneity. The paper finds no statistical difference in the effect of financial structure on the sensitivity of investment to

output growth. It concludes that it is the level and not the type of financial structure that matter toward growth, further emphasizing that the two categories of structure complement each other.

Lastly, we look at Beck et al's (2007) paper on finance and inequality. If the relationship between finance and growth is causal, it is critical to look at whether this benefits the whole economy or just the elite. The theory suggests that with increased allocation efficiency, finance funding should go to the individuals with the highest potential, no matter their initial level of wealth, decreasing overall inequality. Taking data from 72 countries from years 1980-2005, Beck et al (2007) use both OLS and GMM techniques to estimate the effect of their independent variable, credit, on their dependent variable, a countries Gini coefficient. The use of panel data allows them to control for country and year specific affects, while also employing an instrumental variable to help mitigate endogeneity. They find that financial development significantly reduces inequality growth, giving an example of Honduras to have a 0.3% smaller increase in inequality per year if it shared the same financial development levels of neighbours El Salvador.

These papers allow us to understand the previous findings in the literature of the fin dev and growth relationship, setting up a good level of context for our estimations further on in the paper. This same context needs to be fleshed out for the legal origins and endowment theories to help set up the full picture for our regressions. We start with La Porta et al (1998). This paper looks to show the link between the legal origins of a country and its level of financial development. It adds to our theory by using both French and British legal origin, plus Scandinavian and German legal origins. The paper looks at 49 different countries that had at least 5 publicly traded companies to analyse the level of legal protection for investors. This protection is a necessary precursor for investment, without it, investor power would decrease, and finance would not flow. Through using OLS techniques, La Porta et al (1998) make three findings. The first is that creditors rights are much stronger in British common law countries compared to the civil law countries. Secondly it looks at legal enforcement, a substitute for weak legal rules that are not abided by. It finds that countries with Scandinavian and German legal origins are best at enforcement, through measurements such as efficiency of the judicial system, rule of law, corruption levels, risk of expropriation by the government, and likelihood of contract repudiation. French civil law countries were the worst in this regard, exacerbating their ability for legal protections. Finally, La Porta et al (1998)

looked at ownership concentration. This is a telling sign of weak legal protection, as shareholders need high ownership and voting rights to making managerial actions and changes if within a weak legal system. This shows French civil law countries to significantly have the highest ownership concentration. They conclude that British common law provides the most legal protection for investors, and therefore the strongest framework for financial development, with French civil law as the lowest, and Scandinavian and German in between. Acemoglu et al (2001) analyses the effect of a country's initial endowments for European colonizers, and how this affects the type of institutions set up within this colonies. With a data set consisting of 79 countries data from the mid-17th century to mid-19th century, they used OLS regression to measure the effect of likely hood of settlement on level of institutions. They use proxies for both measures, using settler mortality rates and risk of expropriation respectively. They find that 27% of variation in current institutions can be explained by settler mortality from over 100 years ago, a significant amount. Oto-Peralias et al (2014) combines these two theories, taking the view that they are not mutually exclusive from one another. They do this through looking at the significance of an interaction term of settler likelihood and legal origin on private credit to GDP. They proxy settler likelihood on population density of colonies, allowing them to expand their cross-sectional data set to 100 countries. Oto-Peralis et al's (2014) reasoning for this is that colonizers settlements would be limited by this high density. Furthermore, high population density gave higher ability of exploitation. Where initial endowments were high, common law had a lower private credit to GDP ratio than civil law, at 0.17 to 0.24. However, where endowments were low, common law private credit to GDP massively outweighed civil law, which remained the same. This is shown through their OLS regressions, which show a significant decrease in private credit to GDP for common law as endowments increase, whereas the coefficient for endowments and civil law is insignificant and close to zero. This brings to light two conjectures. The first is that the endowment theory may only apply to common law countries, as its level left financial development unchanged in civil law countries, with the second being that the legal origins theory is dependent on the initial level of endowments, as common law garners lower financial development than civil law at high endowments, potentially disproving it. In the next section we will run regressions to analyse this relationship.

3.1 Econometric method and data set

$$Growth\ Indicator_i = \alpha_i + \beta_1 Financial\ Development\ Indicator_i + \beta' Control\ Set_i + \varepsilon_i \quad (1)$$

The OLS specification we will use for our regressions on the relationship between finance and growth is shown above. The dependent growth indicator variables will include both economic growth and inequality growth, measured as GDP per capita and a countries Palma ratio respectively. The independent financial development indicator variables will be the same as those used in King and Levine's (1993) paper, which are liquid liabilities to GDP (LLY), deposit money bank assets to central and deposit money banks assets (BANK) and private credit to nonfinancial sector to GDP (PRIVY), with β_1 showing their effect on growth. These aim to cover all facets of financial development, with LLY measuring the size of financial intermediaries through depth of lending, BANK showing the importance of financial institutions compared to the central banks, and PRIVY measuring the efficiency of those institutions through measuring its financing of non-state projects (King and Levine, 1993). α is the constant in the regression and ε is the random disturbance. β is the coefficient for the control set vector. These specific controls will be established in each individual regression in section 3.2.

For the OLS technique to give causal and unbiased results it needs to satisfy the Gauss Markov assumptions. The first is that the data generation process takes the form specified above. The second is that the sample used for testing is taken randomly. This is satisfied by using the maximum number of data points available for the regression, which we will do. The third is no perfect collinearity. This states that two of the independent variables are not perfectly correlated, which would lead to inference issues from the respective coefficients. This can be mitigated by doing a simple correlation test, or by understanding the theory behind the variables chosen and knowing they will not be highly correlated, which we have also controlled for. The final two assumptions are that one, the disturbance term is homoskedastistic, and two, that the independent variables being analysed are exogenous. Homoskedasticicty is where the disturbance term has a constant variance, allowing for correct inference of statistical significance to be taken from the p-values. This is controlled for by using robust standard errors in our regression software Stata. Exogeneity implies that the disturbance term cannot be correlated with the independent variables

from which we are taking inference. This is where our simple form of OLS falls short of satisfying the assumptions. Many unobserved characteristics could be affecting both growth and financial development, such as political stability or natural resources. While one can look to control for all of them, it is not always possible. This is called omitted variable bias. If this is the case, when we run the regressions, a significant relationship could be seen, however it would not be causal. Furthermore, our specific regression could suffer from reverse causality (Jerzmanowski, 2017). This is the argument that as an economy grows from other sources of economic drivers, finance follows it, making a relationship seem like it is there, however it is not causal (Robison, 1952).

$$Financial\ Development\ Indicator_i = \alpha_i + \delta_i\ Instrumental\ Variable_i + \beta' Control\ Set_i + \varepsilon_i \quad (2)$$

$$Growth\ Indicator_i = \alpha_i + \beta_1 \widehat{Financial\ Development\ Indicator_i} + \beta' Control\ Set_i + \varepsilon_i \quad (3)$$

To solve this issue, we use an instrumental variable. This is where you find a variable related to the endogenous (related to disturbance term) independent variable, but that is unlikely to be related to the dependent variable or the omitted variables. These two conditions are characterised as instrument relevance, and instrument exogeneity (exclusion restriction) (lecture 8 slides, econometrics 1). The satisfaction of these assumptions comes in different ways. To satisfy the relevance assumption, regressions of the instrumental variable on the endogenous variable must show statistical significance, while also being supported by theoretical relevance. These are the regressions in equation (2). Satisfying the exogenous assumption is harder, relying on theory to show unlikely relevancy between the instrument and the disturbance in the initial regression. Once these assumptions are satisfied, our regression software Stata will estimate δ, to then make an exogenous estimate of the financial indicators. This allows us to then make a new regression with the new exogenous financial variable, as seen in equation (3) and infer the true relationship between independent and dependent variables (lecture 8 slides, econometrics 1). As referenced in the theory and literature review above, we will use the legal origins and initial endowments of a country as an instrument for financial development. These theories need to fit the relevance and exogeneity assumptions to allow for an unbiased estimate of financial development on growth. We will run the regressions for the relevancy of the two theories on financial development at the beginning of section 3.2. Acemoglu et al (2001) theorises that the exclusion restriction for initial endowments comes

from the disease environment. The diseases that affected settler mortality 100 years ago are highly unlikely to be affecting a countries current economic growth due to built up immunities amongst locals and increased medicine, showing exogeneity to the error term in the growth regression. The legal origin theory's exclusion restriction is based on that fact that through colonial expansion and legal inspiration, the spread of the common and civil law is mostly random, making it unlikely to be linked to any sort of predetermined or current sources of growth.

The Main issue with using these theories for an instrumental variable is that they are static. Panel data allows one to regress each variable on each other every year, creating a more accurate representation of their relationship. It also allows for controlling of country and year specific effects. However, as legal origins and initial endowments are initial values, they cannot be used as an instrument in panel data. This leads us to using cross sectional data, creating some endogeneity issues as it may not capture the dynamic relationship between finance and growth. This leaves our regressions open to critique. Nevertheless, we still can take significant inference from our results as the validity of our instruments solves a substantial amount of our endogeneity issues.

The data for the instrumental relevance regressions come from Beck et al's (2003) paper. This consists of 70 countries legal origins and settler mortality plus further controls summarized in table 1 of section 3.2. This data does not include Scandinavian and German legal origins as in La Porta et al (1998) due to the regressions looking at both initial endowments (shown through settler mortality) and legal origins together. As Scandinavian and German legal systems did not spread through colonial settlement, they are excluded. The financial indicators are slightly different to those used in King and Levine (1993). They collect financial development data from 1990-95, looking at PRIVY (same as before), Stock Market Development and Property Rights. Stock Market development is measured by the total value of stocks held by shareholders to GDP, while Property Rights is an index showing the enforcement of law that protects private assets (Beck et al, 2003). Legal Origins is given by French and British legal origins, taking the value of 1 if originally from the respective family of law, and 0 if not. Settler Mortality is measured by the log of yearly deaths of soldiers per 1000 soldiers (Beck et al, 2003). Finally, the data for the growth regressions is cross-sectioned from 40 countries in years 1981-2018 from the world bank,

while the inequality data is cross sectioned from 34 countries in years 2002-2017, amalgamating data from the world bank and our world in data. This lays the groundwork for our empirical evidence.

3.2 Empirical evidence

Table 1

	N	Mean	Std. dev	Min	Max
Panel A: Summary statistics: Legal origins, and endowments					
Private Credit (PRIVY)	70	0.32	0.30	0.01	1.48
Stock Market development	70	0.19	0.40	0.00	1.89
Property Rights	69	3.12	0.99	1.00	5.00
French Legal Origin	70	0.64	0.48	0.00	1.00
Settler Mortality	70	4.67	1.24	2.15	7.99
Africa	70	0.40	0.49	0.00	1.00
Latin America	70	0.36	0.48	0.00	1.00
Catholic	70	39.44	36.89	0.10	97.3
Muslim	70	23.90	33.87	0.00	99.4
Other Religion	70	25.79	23.58	0.30	86.0
Independence	70	0.32	0.32	0.00	1.00
Ethnic Fractionalization	70	0.42	0.31	0.00	0.89
Legislative Competition	68	5.81	1.62	1.00	7.00
Checks	68	2.68	1.4	1.00	6.00
Panel B: Summary statistics: Growth					
Bank	40	80.17	14.49	38.94	98.17
LLY	40	52.41	36.91	13.65	195.41
PRIVY	40	45.64	37.82	37.82	162.65
Growth Rate of GDP	40	1.82	1.51	-0.91	5.56
Inflation Rate	40	42.91	100.48	0.82	367.90
Government Spending to GDP	40	13.22	3.43	7.76	22.63
Trade to GDP	40	65.31	39.98	21.79	223.42
Initial GDP	40	5363.24	9101.85	366.48	40560.40
Average initial schooling years	40	4.66	2.71	0.65	12.03
Settler Mortality	31	4.57	1.04	2.15	6.50
British Legal Origin	40	0.33	0.47	0.00	1.00
French Legal Origin	40	0.60	0.50	0.00	1.00
Scandinavian Legal Origin	40	0.05	0.22	0.00	1.00
German Legal Origin	40	0.03	0.16	0.00	1.00
Panel C: Summary statistics: Inequality					
Palma Ratio	34	5.12	3.94	1.92	16.82
LLY	34	70.05	42.21	12.84	175.68
BANK	34	93.36	8.53	67.10	99.98
PRIVY	34	70.98	40.23	21.93	203.97
C02 Emission	34	6.60	4.64	1.04	18.49
Average initial schooling years	34	9.49	1.94	5.41	13.10
Percentage of population born outside of country	34	6.31	6.10	0.14	22.96

Tabel 1 shows all variables used in this paper. We start by showing some representative statistics to contextualise these variables. Take Private credit for example, Zaire has the lowest at 0.005 while the USA has the highest at 1.476, with countries such as Cote d'Ivoire and Morrocco surrounding the mean of 0.318. Private Credit has one less observation due to lack of data from the Central African Republic. For the growth regressions, we can look at LLY, where Niger has the lowest at 13.65, Japan has the

highest at 195.41 and Pakistan at the median with a ratio of 42.99. The number of countries with data on settler mortality drops to 31, as now we are including countries with Scandinavian and German legal origin that do not have the data for this variable. New Zealand and Australia had the lowest settler mortality at 2.15, with Mali at the highest with 7.98. For the inequality stats, we look at Palma ratio and BANK. The lowest Palma ratio sits at 1.92 and belongs to the Netherlands, with the highest Palma ratio coming from Chile with 16.82. The median country is Armenia, with a Palma ration of 3.32. Looking at BANK, Argentina has the lowest ratio, Croatia has the highest, and Spain is at the median, with 67.09, 99.98 and 97.11 respectively. We now move to our regressions showing the relevance of our instrumental variables. We use Beck et al's (2003) regression specifications to do so. Our first regression goes as follows:

$$Financial\ Indicator_i = \alpha + \beta_1\, French\ Legal\ Origin + \beta_2\, Latin\ America + \beta_3\, Africa + \beta_4\, Catholic + \beta_5\, Muslim + \beta_6\, Other\ Religion + \beta_7\, Indy + \beta_8\, Ethnic\ Fration \quad (4)$$

Latin America and Africa are controls attempting to look for country or area specific characteristics that may be omitted in a cross-sectional regression. They are done by a dummy variable, becoming 1 when a country is within this area, and zero if not. Beck et al (2003) comment on the issues with this, as there is high correlation between French legal origin and Latin America, along with a high correlation between Africa and settler mortality. This may create collinearity between variables, diminishing their true effect on the financial indicator. With this in mind, they are still necessary to control for. The controls Catholic, Muslim and other religion is the share these religions take up of a country's population. It is important to know that other religions exclude protestants as these are captured in the constant of the regression. The same collinearity issue comes with catholic and French legal origin, however the correlation between these is lower than the cases before. Inference difficulties will still need to be considered. Finally, Indy is a fraction of the years a country has been independent since the year 1776, with ethnic fraction showing the probability of two random individuals from the same country coming from different language speaking ethnicity groups. These help show the time for financial development to grow since liberalisation and measuring the level of financial openness as it can be shown that more diverse economies have laws to help marginalise and supress other ethnic groups (Beck et al, 2003). Finally, only

French legal origin is included in the regression, as the β_1 in each regression will show the difference in level of financial development to British legal origin

Table 2

	French Legal Origin	Latin America	Africa	Catholic	Muslim	Other Religion	Indy	Ethnic Fraction	Adjusted R^2
Private Credit	-0.233***								0.124
	(0.088)								
	-0.136**	-0.292***	-0.417***						0.378
	(0.067)	(0.092)	(0.100)						
	-0.181**			-0.002	-0.003	-0.001			0.121
	(-0.086)			(0.003)	(0.003)	(-0.005)			
	-0.275***						0.191		0.148
	(0.097)						(0.136)		
	-0.247***							-0.289***	0.203
	(0.084)							(0.095)	
	-0.168**	-0.352***	-0.348***				0.170	-0.109	0.384
	(0.080)	(0.112)	(0.107)				(0.179)	(0.133)	
Stock Market Dev	-0.356***								0.173
	(0.118)								
	-0.278***	-0.242**	-0.312**						0.24
	(0.101)	(0.128)	(0.143)						
	-0.265***			0.002	0.002	0.006			0.199
	(0.107)			(0.004)	(0.004)	(-0.005)			
	-0.395***						0.176**		0.179
	(0.111)						(0.082)		
	-0.362***							-0.121	0.17
	(0.117)							(0.122)	
	-0.308***	-0.299***	-0.315*				0.224	0.087	0.237
	(0.102)	(0.104)	(0.177)				(0.150)	(0.176)	
Property Rights	-0.947***								0.198
	(0.241)								
	-0.836***	-0.250	-0.969***						0.351
	(0.206)	(0.265)	(0.243)						
	-1.065***			-0.002	-0.005	-0.007			0.182
	(0.291)			(0.009)	(0.009)	(-0.011)			
	-1.103***						0.692**		0.232
	(0.235)						(0.346)		
	-0.995***							-0.813**	0.253
	(0.232)							(0.339)	
	-0.856***	0.286	-1.014***				0.182	0.178	0.334
	(0.203)	(0.297)	(0.293)				(0.393)	(0.477)	

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2's results show that French legal origin has a significant and negative impact on financial development of at least 5% level on all the financial development indicators. Furthermore, it enters negatively at the 1% level for both stock market development and property rights even when controlling for other sources of variation as listed above. This can be quantified by stating if Zaire, the country with the lowest private credit ratio, originated from common law instead of civil law, the ratio would've jumped from 0.005 to 0.1815, like that of Cameroon, a country in the 35th percentile of Private Credit.. Overall, this shows that legal origins have an impact on the level of current financial development.

Next, we run the regression showing the effect of settler mortality, and therefore initial endowments, on the financial development indicators. We use the same controls as before, continuing to follow Beck et al' (2003) specification as shown in equation (5).

$$Financial\ Indicator_i = \alpha + \beta_1\, Settler\ Mortality + \beta_2\, Latin\ America + \beta_3\, Africa + \beta_4\, Catholic + \beta_5\, Muslim + \beta_6\, Other\ Religion + \beta_7\, Indy + \beta_8\, Ethnic\ Fration \quad (5)$$

Tabel 3

	Settler Mortality	Latin America	Africa	Catholic	Muslim	Other Religion	Indy	Ethnic Fraction	Adjusted R^2
Private Credit	-0.164***								0.440
	(0.030)								
	-0.137***	-0.230***	-0.163						0.500
	(0.038)	(0.086)	(0.113)						
	-0.161***			-0.004	-0.003	-0.002			0.490
	(0.028)			(0.003)	(0.210)	(0.004)			
	-0.178***						-0.168		0.460
	(0.031)						(0.138)		
	-0.166***							0.025	0.432
	(0.033)							(0.076)	
	-0.140***	-0.224*	-0.131				-0.038	-0.080	0.489
	(0.038)	(0.128)	(0.121)				(0.176)	(0.103)	
Stock Market Dev	-0.170***								0.267
	(0.047)								
	-0.182***	-0.204	-0.008						0.305
	(0.071)	(0.132)	(0.199)						
	-0.159***			-0.001	-0.001	0.004			0.372
	(0.042)			(0.003)	(0.003)	(0.005)			
	-0.191***						-0.260		0.297
	(0.056)						(0.158)		
	-0.198***							0.261	0.292
	(0.059)							(0.167)	
	-0.189***	-0.145	-0.057				-0.099	0.141	0.294
	(0.073)	(0.127)	(0.198)				(0.180)	(0.183)	
Property Rights	-0.349***								0.177
	(0.099)								
	-0.151	-0.489*	-0.903**						0.220
	(0.177)	(0.290)	(0.352)						
	-0.339***			-0.015*	-0.012	-0.010			0.194
	(0.092)			(0.009)	(0.008)	(0.011)			
	-0.377***						-0.336		0.175
	(0.104)						(0.387)		
	-0.338***							-0.102	0.166
	(0.133)							(0.415)	
	-0.180	-0.271	-1.010**				-0.418	0.345	0.214
	(0.125)	(0.407)	(0.392)				(0.550)	(0.514)	

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Tabel 3's results show that settler mortality enters significantly at a 1% level on all regressions bar two. The two that it does not enter significantly is when controlling for continent specific affects with Property Rights. As stated before, Africa and settler mortality are highly correlated. In this instance, it is likely that the significance on Africa is taking away from the significance of settler mortality on Property Rights, meaning a relationship that is there is not being shown. The overall relationship from these regressions is

that when settler mortality rises, financial development falls, in line with the endowment theory. These results can be contextualised through looking at the standard deviation in settler mortality. If a country such as Paraguay had a decreased settler mortality by one standard deviation, moving from 4.36 to 3.12, its stock market development would had increased by 0.198, moving it from the 44th percentile to the 80th percentile. These findings are robust to all set of controls.

$$Financial\ \ indicators_i = \alpha + \beta_1 \text{Legal Origins} + \beta_2 Settler\ Mortality + \beta_3 \widehat{Political\ Structure}_\iota \quad (6)$$

To further confirm the relationship between our instruments and financial development we need to carry out a robustness checks. Beck et al (2003) state that political structure may not develop monotonically from the endowment or legal origins theory, while still being influenced by it as a baseline. It could be the case that the only channel of variation in financial development comes through variation in political structure, and no other forms of effect from our instruments as explained in the theory. This would make our instruments invalid. We check for this in the regression (6) above. In Beck et al's (2003) paper, political structure is measured through Legislative Competition and Checks. Legislative competition is an index showing the level of competition in the countries last election, going from 1 (no competition) to 7 (most competition). Checks measures the number of individual veto's on lawmaking and executive decisions. In the regressions these will be instrumented by legal origin, settler mortality, the religious dummies, independence and ethnic fraction, all controls from before.

Tabel 4

	OIR test	Settler Mortality	French Legal Origin	Legislative Competition	Checks	Adjusted R2	Obs.
Private	3.693	-0.169***	-0.123**	-0.037		0.429	68
Credit	(0.449)	(0.051)	(0.059)	(0.048)			
	2.405	-0.184***	-0.160**		-0.083	0.317	68
	(0.662)	(0.044)	(0.064)		(0.060)		
Stock	1.232	-0.199**	-0.215**	-0.090		0.224	68
Market	(0.873)	(0.090)	(0.083)	(0.079)			
Development	2.445	-0.177**	-0.274**		-0.095	0.192	68
	(0.655)	(0.074)	(0.105)		(0.086)		
Property	3.214	-0.186	-0.858***	0.093		0.348	67
Rights	(0.523)	(0.154)	(0.223)	(0.154)			
	3.055	-0.177	-0.780***		0.160	0.323	67
	(0.549)	(0.159)	(0.225)		(0.243)		

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

This controls for any endogeneity issues. As we are using multiple instruments, we use an over-identification test (OIR) which shows that all instrumental variables are exogenous (Econometrics 1, week 8). This follows the same specification as used in Beck et al's (2003) paper and produces equation (6). Tabel 4 indicates that even when controlling for political structure, there is a significant relationship between our instrumental variables and financial development. These results show that political structure is not the only channel through which our theories affect financial development, helping us prove the relevancy assumption needed for a valid instrument. This is due to none of the coefficients coming up positive for our political structure proxies, while our instruments still remain significant. This gives us enough evidence to support the use of the endowment and legal origins theories as instruments for our growth regression. Beck et al (2003) ran further robustness checks and regressions on the relationship between the two explanatory variables on financial development. Through these, they conclude that both theories are able to explain the cross country variation in financial development, however settler mortality is overall better at explain these differences. This will be important when looking at the regressions of the instrumented financial development indicators on growth.

$$Growth\ rate\ of\ GDP\ per\ capita_i = \alpha_i + \beta_1 \widehat{Financial\ Indicator}_i + \beta_2 Log\ of\ Initial\ GDP + \beta_3 Average\ Initial\ Schooling + \beta_4 Inflation\ Rate + \beta_5 Trade\ to\ GDP + \beta_6 Government\ spending\ to\ GDP + \varepsilon_i \quad (7)$$

To formulate these regressions, we use the cross-country specifications used by Levine et al (2000) seen in equation (7). The first control set will include just initial GDP and Average Initial Schooling, with the second adding Inflation Rate, Trade to GDP and Government spending to GDP. Average initial schooling is the mean number of years an individual is in education in the country, with both this and initial GDP being taken in the year 1981. We will take the logs of initial GDP following Levine et al (2000). The initial GDP will control for a convergence effect while schooling controls for human capital. The other three controls are averaged across the years 1981-2018 of our data set, controlling for other governmental policies. Thus, we will instrument the three financial indicators, BANK, LLY and PRIVY, used in King and Levine (1993), on our instruments legal origins and settler mortality, then running separate

instrumented regressions on Growth of GDP per capita, providing the two different control sets for each. We will first look at the regressions for the effect of financial development on economic growth when instrumented by legal origins. We will include French, British German and Scandinavian legal origins, per La Porta et al (1998) and Levine et al (2000). This will help us increase the sample size as much as possible.

Table 5

Explanatory variables	Coefficient (β_1)	Standard error	t-stat	P-value	Obs.
Conditioning set 1					
BANK	-0.043	0.151	-0.29	0.774	40
LLY	0.017	0.024	0.72	0.473	40
PRIVY	0.027	0.03	0.92	0.36	40
Conditioning set 2					
BANK	-0.001	0.119	-0.01	0.99	40
LLY	0.018	0.018	1.03	0.305	40
PRIVY	0.034	0.024	1.38	0.169	40

$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 5 shows that when the financial development indicators are instrumented on Legal origins, they are unable to explain any variation in cross country growth rate of GDP. This is due to none entering statistically significant. This could be due to one of two things. The first is that there is the potential that with our up-to-date data, financial development no longer has the effect it used to on economic grow. This will be explored later. The second is that legal origins are not adept at explaining the cross country variations in current day financial development, as the data set used before took values from the 90's. Furthermore, Beck et al (2003) comment on legal origins being an inferior instrument compared to settler mortality, while Oto-Peralias et al (2014) found that legal origins is conditional on the level of initial endowments. This creates more motivation to run the same regressions, but using settler mortality as an instrument. The results for this is presented below in table 6.

Tabel 6

Explanatory variables	Coefficient (β_1)	Standard error	t-stat	P-value	Obs.
Conditioning set 1					
BANK	0.123*	0.067	1.87	0.062	31
LLY	0.050***	0.016	3.05	0.002	31
PRIVY	0.074**	0.031	2.41	0.016	31
Conditioning set 2					
BANK	0.130**	0.058	2.26	0.024	31
LLY	0.052***	0.011	4.51	0.000	31
PRIVY	0.080***	0.029	2.75	0.006	31

$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Tabel 6 confirms that settler mortality is a more valid instrument than legal origins as it helps capture the exogenous effect of finance on growth. Furthermore, it shows that the exogeneous part of financial development has a statistically significant effect of economic growth. All financial development indicators enter at the 5% significance level bar BANK for the first conditioning set. This shows that financial development has had a positive effect on growth over the span of our data set. For example, if Paraguay, the country at the 25th percentile of LLY, would've increased LLY to that of Pakistan at the medium (going from 25.701 to 42.929), their growth rate would've increased by 0.861 percentage points per year. This is significant in the context of GDP per capita growth. The reduced number of observations makes inference from these estimates less statistically sound, but the extent to the change in growth is still consistent with that of previous literature.

So far, we have ignored the existence of a break in our data. This could explain part of the reason legal origins was unable to explain cross country variations in economic growth. As it spans from 1981-2018, the financial crash of 2008 sits in the middle of it. As we have seen through De Gregorio (1995) and Krozner et al (2007), financial crashes can have incredibly negative effects on both economic growth as seen in Latin America, and on growth of industries reliant on finance. This could explain why the reduced years data set shows insignificant results. To look at this we will segment our data into 1981-2008 and 2009-2018 to look at the two different periods, running regressions for both. We will follow Levine et al's (2000) specification once more (7), using the instrument of settler mortality. Two differences to note is that for the 2009-2018 regressions, average initial schooling will be taken from 2010 as data points are only at 5 year intervals, with one missing data point for the Dominican Republic, excluding it. This should not create any inference issues.

Table 7 (1981-2008)

Explanatory variables	Coefficient (β_1)	Standard error	t-stat	P-value	Obs.
Conditioning set 1					
BANK	0.142*	0.074	1.92	0.055	31
LLY	0.073***	0.024	3.06	0.002	31
PRIVY	0.110**	0.051	2.15	0.031	31
Conditioning set 2					
BANK	0.139**	0.065	2.13	0.033	31
LLY	0.071***	0.016	4.56	0.000	31
PRIVY	0.109**	0.046	2.39	0.017	31

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8 (2009-2018)

Explanatory variables	Coefficient (β_1)	Standard error	t-stat	P-value	Obs.
Conditioning set 1					
BANK	0.016	0.27	0.06	0.953	30
LLY	0.002	0.03	0.06	0.953	30
PRIVY	0.003	0.054	0.06	0.953	30
Conditioning set 2					
BANK	0.097	0.117	0.83	0.409	30
LLY	0.015	0.018	0.80	0.425	30
PRIVY	0.028	0.031	0.88	0.38	30

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Here we can see the difference in the effect of financial development on economic growth before and after the financial crash. This shows a statistically significant relationship between financial development and economic growth before the financial crash (table 7), followed by a statistically insignificant relationship after the crash (table 8). We ran further regressions after the crash but excluding the years 2009-2011 as these were recession years that may have skewed the data. These were also insignificant. We include them in the main regressions as they are a product of financial development. These results may indicate that the fin dev relationship driving previous literature was unsustainable. Financial liberalization created great wealth up until 2008, with it culminating in the crash. From that point on, financial red tape has significantly increased, such as the Dodd-Frank act of 2010 that forced American banks to increase cash reserves and reduce risk (Investopedia). Our theory suggests this will lead to less productive financial institutions. Resource allocative efficiency will decrease as financial institutions are no longer able to do as they please. Pagano (1993) states that the variable φ (institution efficiency) in the growth equation is variable to increased financial regulation, with it showing the fraction of savings transformed into investment. Therefore, this increase in financial requirements will decrease φ, and lead to a decrease in economic growth. Our data suggests that the decrease due to new regulation has diminished the effect of financial development on growth to insignificance. Furthermore, when looking at the mean values of BANK, LLY, and PRIVY for the 2009-2018 data set, we can confirm they are far under the values stated in Law and Singh (2014). This means the lack of relationship between finance and growth post financial crash cannot be attributed to a general growth in financial development above the beneficial threshold. These statements are not statistically driven, however they do attempt to make sense to why the fin dev relationship has weakened post-crash.

$$Palma\ Ratio_i = \alpha_i + \beta_1 Financial\ development\ indicator_i + \beta_2 C02\ Emissions + \beta_3 Average\ Initial\ Schooling + \beta_4 Population\ Diversity + \varepsilon_i \quad (8)$$

Financial development does not only look to drive economic growth, as seen through Levine et al (2007). Even if the relationship between finance and economic growth is no longer there, it could still have beneficial impacts towards inequality, maintaining the importance of financial policy. We will use the Palma ratio as our proxy for inequality over the Gini coefficient in the regression (8). This is a ratio between the earnings of the top 10% of a country against the bottom 40%. This is due to both data availability and the Palma ratio's ability to capture changes in the top and bottom earners, attributing less weight to the middle class, whose steady income can distort changes in the Gini coefficient (Investopedia). Our explanatory variables will remain the same as before, using the financial development indicators in King and Levine (1993). Due to data restrictions we are unable to use settler mortality as an instrument, with only a handful of countries with consistent inequality data from 2002-2017 having been colonised. The choice was made not to use legal origins due to its inability to explain variation in economic growth. This means the results of the regressions need to be considered with great caution as we are unable to control for endogeneity. We use three controls; C02 emissions, average initial schooling and population diversity. C02 emissions helps us control for a countries growth away from industrialisation (a high source of inequality), with average initial schooling controlling for human capital.. Population diversity is measured by the fraction of the population born in a different country, which could be another source of high inequality. The static nature of initial schooling ruled out the use of panel data. The regression is shown in equation (6).

Tabel 9

Explanatory variables	Coefficient (β_1)	Standard error	t-stat	P-value	Obs.
BANK	0.039	0.082	0.63	0.536	34
LLY	-0.023**	0.009	-2.61	0.014	34
PRIVY	-0.030**	0.013	-2.22	0.034	34

$^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

Tabel 9 shows a two of the financial development indicators to have a statistically significant impact on inequality. The table shows that as they increase, inequality decreases. This is in line with the theory presented by Levine (2007), stating that well developed financial systems allocate finance to the highest

potential individuals, irrespective of previous wealth. It still needs to be reinforced that these statistics are merely representative and do not show any sign of a causal relationship. Its presence motivates for more research beyond this paper to further understand the financial development and growth relationship post-crash.

Conclusion

Through looking at the relationship between financial development and growth we found 3 things. The first is that that while both legal origins and initial endowments are both valid instruments for financial development, settler mortality (therefore initial endowments) is much better at explaining more recent variations in economic growth through the financial development indicators. Having tested for our instruments, we then found that there is a exogenous relationship between finance and growth through using cross sectional data from years 1981-2018. However, after controlling for a break in the data around the financial crash, the relationship went to insignificance in the years preceding the crash. Countries had not reached the threshold of finance being beneficial, so we theorise that this could be down to increased legislation, no longer allowing financial institutions the freedom to allocate resources efficiently. Further research will need to done to uncover the true reasons of the breakdown in the relationship. Nevertheless, we still find a relationship between finance and reductions in inequality, although these regressions need to be taken with much caution due to large endogeneity issues. We were also unable to use panel data due to the static nature of our instruments and controls. This still creates endogeneity issues with our regressions, even with the use of our valid instruments. Understanding the dynamic relationship between finance and growth will further add to the literature as it is likely to have changed post 2008, motivating the need for more investigation. Overall, while we found inconclusive evidence toward the relationship between finance and growth, pin pointing a change and finding differences on either side. Taking into account this break will be imperative to a full understanding of finances effect on growth and our paper adds motivation for a refresh in the literature to see if the beneficial causes of financial development still hold today.