Is There a Relationship Between Shareholder Protection and Stock Market Development?

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Abstract

The paper uses recently created datasets measuring legal change over time in a sample of 28 developed and emerging economies to test whether the strengthening of shareholder rights in the course of the mid-1990s and 2000s promoted stock market development in those countries. It finds only weak and equivocal evidence of a positive effect of shareholder protection on market capitalisation, the value of stock trading, and the turnover ratio, and a negative impact on the number of listed companies. There is stronger evidence of reverse causality, in the sense of stock market development at country level generating changes in shareholder protection law. We conclude, firstly, that legal reforms were at least in part an endogenous response to stock market development and not simply a reaction to the generation of global standards; but, secondly, that the laws passed in response to the demand for shareholder empowerment did not consistently have the expected impact on financial markets, and may have had some negative and perverse results.

Keywords: corporate governance, shareholder protection, financial development, stock market development.

JEL Classifications: O16, G33, G34, K22, O16

1. Introduction

At the core of the new institutional economics pioneered by Douglass North is the claim that the quality of legal and other institutions makes a difference to economic development and growth (North, 1990; North et al., 2009). The idea can be traced back further to the writings of Max Weber (1978, originally published in 1922) who, comparing the experience of industrialising countries with others, argued that the emergence of capitalism required a formal-rational legal system of the type which first emerged in western Europe in the late middle ages. In this type of analysis the legal system is assumed to operate as an endowment or fixed investment which determines the developmental path of market economies 'without itself being subject to change' (see Milhaupt and Pistor, 2008: 18-22).

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The endowment perspective received a major impetus in the late 1990s and in the first decade of the current millennium. In their cross-sectional studies of the relation between law and finance, Andrei Shleifer and his collaborators claimed that a higher level of shareholder and creditor protection fostered financial development (La Porta et al. 1998, 2008; Djankov et al., 2008). This position has been extremely influential among researchers and policy-makers since the mid-1990s, thanks in part to its conjunction with a parallel literature claiming to show that financial development promotes economic growth (King and Levine, 1993; Levine, 1997; Beck et al 2000, 2003; Claessens and Laeven, 2003). During this time, strengthening shareholder and creditor rights as a precondition for financial market development became a mainstay of global policy initiatives, including the World Bank's *Doing Business* initiative, which dates from 2003, (World Bank, 2003) and the OECD's *Principles of Corporate Governance*, first published in 1999 and updated in 1999 and 2015, (OECD, 2015), as well as many national law reform programmes.

Nevertheless, empirical research has consistently challenged the claim that law matters for finance. Colonial duration, open trade and political factors such as a competitive party system and governmental stability have been identified as alternative factors driving institutional and economic divergence across countries and over time, resulting in uneven financial development (Acemoglu, Johnson and Robinson, 2001; Rajan and Zingales 2003; Olsson 2009; Roe and Siegel 2011). In addition, it is increasingly recognised that, as law influences economic outcomes in multiple ways and with various feedback mechanisms, claims about the effect of legal rules are difficult to substantiate (Chong and Calderon 2000). The experience of the UK and the US appears to show that causality worked in reverse, in the sense that it was the rise of an investor class and the expansion of equity markets in the course of the nineteenth century which led to a strengthening of legal backing for shareholder rights (Cheffins 2001; Coffee 2001). There is compelling evidence that, in the UK case, ownership dispersion preceded the enactment of shareholder-protective company legislation (Franks et al. 2009; Cheffins 2008). Thus in this area, at least, North's hypothesis of the importance of legal-constitutional property rights for Britain's industrial growth is quite hard to square with the historical evidence showing that financial development preceded legal change.

In this study we update the story on the law-finance relation to the present day. Our focus is on the effects of the increase in legal protection for shareholder rights which has taken place around the world since the 1990s. We use newly available data on laws relating to shareholder protection to assess the impact on legal change on stock market development in 28 countries. We also use time-series economic techniques to investigate the existence of a reverse-causal relationship; in other words, the possibility that, as in nineteenth century Britain, it was changes in finance which drove legal reform.

The empirical legal origins literature beginning with La Porta et al. (1998) used mostly cross-sectional evidence on the state of the law as it stood in the late 1990s and the early 2000s. This was arguably not a strong empirical base from which to draw firm conclusions on the long-run relationship between legal change and financial development. Our approach, by contrast, is based on longitudinal measures of cross-national legal variation for a number of countries over a long time-span, 1990-2013. These data make it

possible to assess the relationship between legal and economic variables using time-series and panel-data techniques. Thus our study breaks new grounds in two ways: firstly, in using novel 'leximetric' techniques to measure legal change over time; and secondly in combining leximetric data with econometric analysis which models the relationship between law and the economy in a dynamic fashion.

The paper is structured as follows: Section 2 outlines the legal dataset we are using and explains the trends it demonstrates in shareholder protection over time. Section 3 explains the financial data and econometric methods used to explore the relationship between shareholder protection and stock market development. Section 4 presents our econometric findings on the relationship between legal reforms and economic outcomes in the area of stock market development. Section 6 concludes.

2. Trends in shareholder protection over time

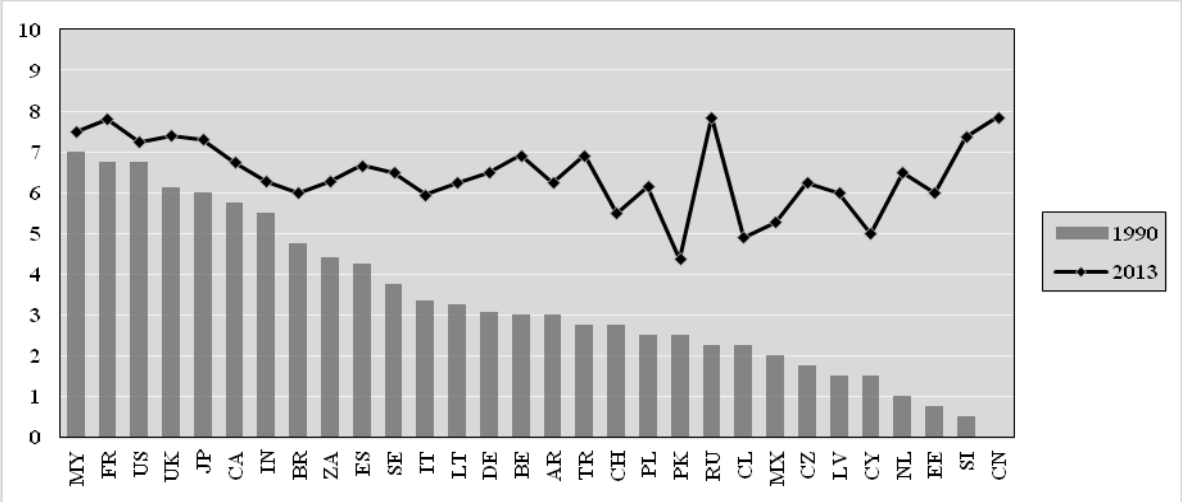
The shareholder protection dataset on which this paper is based was developed at the Centre for Business Research (CBR) of the University of Cambridge. The dataset is available on the project website of the CBR, where detailed explanations of the codings are provided.[1]

The coding of shareholder protection in the CBR dataset uses an index of ten variables (see Data Appendix, Table 1). The leximetric methodology employed in the definition and choice of variables is explained in more detail in related papers (Siems, 2008; Armour et al., 2009a; Buchanan et al., 2014; Katelouzou and Siems 2015). The relevance and usefulness of CBR dataset have been acknowledged in the World Bank's *Doing Business Report* (World Bank 2015: 106-8), which has incorporated some of the variables from the CBR index into its own 'Protecting Minority Shareholders' index. There is a growing body of work applying the CBR dataset in econometric analysis (Armour et al., 2009a; Van der Elst, 2010; Deakin et al., 2012; Belloc, 2013; Guillen and Capron, 2016).

For the analysis presented in this paper we used the CBR shareholder protection index to code for the laws of thirty countries over the period between 1990 and 2013. The countries represented are a range of developed systems (Belgium, Canada, Cyprus, France, Germany, Italy, Japan, Netherlands, Spain, Sweden, Switzerland, UK, USA), developing countries (Argentina, Brazil, Chile, India, Malaysia, Mexico, Pakistan, South Africa, Turkey), and transition systems (China, Czech Republic, Estonia, Latvia, Lithuania, Poland, Russia, Slovenia). The period between 1990 and 2013 was chosen in order to identify a period of time in respect of which all systems were undergoing a general move to liberalise their economies, as part of which legal reforms aimed at improving corporate governance rules were on the agenda. This period is also of interest as it includes events such as the transition to a market economy and the accession to the EU in some countries, as well the 'dotcom bubble' and the global financial crisis.

[1] See http://www.cbr.cam.ac.uk/research/research-projects/completed-projects/law-finance-development/. In addition, this website includes the CBR datasets on creditor protection and labour regulation.

Figure 1: Shareholder Protection in 30 countries 1990 and 2013



Source: Katelouzou and Siems 2015

A comparison between 1990 and 2013 in Figure 1 shows that, without exception, all countries have increased the level of shareholder protection. This trend is in line with quantitative findings using similar indices. The corresponding 60-variable CBR dataset has been coded for longer time-frames (usually 1970-2005), although for a more limited number of countries: France, Germany, India, the UK and the US (Lele and Siems 2007, Armour et al. 2009b), Australia (Anderson et al. 2012a, 2012b), Malaysia (Chen 2013), Belgium and Italy (Van der Elst 2010).[2] Other studies reach corresponding findings with alternative datasets measuring aspects of shareholder protection and company law (Pistor 2000; Hyytinen et al. 2003; Martynova and Renneboog 2011; Masouros 2013). Research mapping the global spread of corporate governance codes under the influence of transnational standard-setting bodies including the World Bank and OECD (Aguilera et al. 2013) also points to a similar picture, and is relevant here since the CBR indices not only code the positive law but also take into account alternative forms of regulation, such as corporate governance codes as well as listing rules and case law (see Lele and Siems 2007).

The trend towards corporate governance reforms around the world is also confirmed in more detailed country-specific research that aims to explain these leximetric trends. For example, Schnyder (2011, 2012) presents an in-depth discussion of how ownership structures have influenced corporate governance reforms in the Netherlands, Sweden and Switzerland, and Klages (2013) discusses the evolution of corporate governance reforms in Germany.

[2] Guillen and Capron (2016) use the CBR index to generate a dataset of over 70 countries, and arrive at a similar result to ours on trends in shareholder protection. Although their dataset is based on the coding algorithm developed in the CBR research, their findings cannot be verified, as the underlying legal data used to generate their codings have not been published. For methodological discussion of the processes for validating findings from synthetic legal indexes, including the importance of publishing the raw data and coding algorithms underlying leximetric research, see Spamann, 2015, and Verkerke and Freyens, 2016.

A modified position is that of Gilson (2001) who suggests that functional convergence is likelier than formal convergence: while the underlying problems are similar, there are too many obstacles in the way of formal harmonisation – where 'functional' means that a comparable result is produced, with, say, incompetent directors being removed, but along different statutory paths. However, such line of reasoning can also be challenged by taking the historical comparative perspective. It can be shown that many rules, such as those on independent directors, audit committees and derivative actions, have been popular legal transplants in recent decades (Siems 2008: 134, 195, 222). Such formal convergence also explains the trend of Figure 1.

In terms of the direction of convergence, Hansmann and Kraakman (2001) suggest that the Anglo-American model of corporate law – with shareholder primacy as the main guiding principle – has won the day. Similarly, Cioffi (2010) and Barker (2010) highlight the prevalence of shareholder-orientated law reforms under both left-wing and right-wing governments. Thus, the argument is that – in contrast to previous work by Roe (1997) – protecting shareholders has also become an issue of concern for 'the left', for example, with the aim to appeal to new voting blocks, to enable better monitoring of companies following financial scandals, and possibly also to accommodate changes to pension systems that in many countries 'turn workers into capitalists' (Gelter 2014; McGaughey, 2016).

A number of forces may have led to this convergence. Adopting an interdisciplinary perspective on legal change, Siems (2008) finds that the increased use of modern forms of communication, approximations in economic policy, company and shareholder structures, and the liberalisation of capital markets all account for growing legal similarities across national systems. Dignam and Galanis (2009) pursue a similar line of research and suggest that it was mainly the process of economic globalisation led by capital and product market liberalisation that led to changes in national-level corporate governance regimes. But this does not imply that these reforms may, then, not also have an effect on financial development at country level. The following empirical analysis aims to address this question of a possible reciprocal relationship between shareholder protection and stock market development.

3. Financial data and econometric methodology

The present paper uses the aggregate of the ten variables of the CBR SPI index as its measure of shareholder protection. As we have seen, these data are available for 30 countries over the period 1990 to 2013. However, long-term stock market data are not fully available for all years and countries. Thus, in order to have a balanced panel, we choose a time span of 1996-2012 for 28 countries (dropping two transitional countries, Estonia and Lithuania).

As indicators of stock market development we use the following four variables:

(1) Market capitalisation of listed companies as a % of GDP, MKAPY. Market capitalization is the share price times the number of shares outstanding.

(2) Stocks traded as a % of GDP, VSTKY. This variable refers to the total value of shares traded during the period. It complements the market capitalization ratio by showing whether market size is matched by trading.
(3) Turnover ratio: the total value of shares traded during the one year period divided by the average market capitalization for the period, TURNOVER;
(4) Listed domestic companies per million of population, LISTPOPM. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. This indicator does not include investment companies, mutual funds, or other collective investment vehicles.[3]

In each case the control variable is the real growth rate of GDP (GGDP). This is expected to net out the country-specific effects of time-trend and cyclical fluctuations on stock market variables. In some earlier research using the CBR dataset (Sarkar, 2013; Deakin et al., 2014), the log of real GDP was used as a control; for international comparability, these values were converted into a common measure using purchasing power parity exchange rates. Using this approach, currency exchange market complications and the arbitrariness involved in finding a common basket of commodities may, however, obscure the true picture of country-wise time-trends and cyclical fluctuations. Furthermore for some countries these PPP-GDP data are not available. For these reasons, GGDP is a better control variable for our current sample. Our data on GDP growth are sourced from the World Bank's World Development Indicators.

To examine whether stock market development causes the changes in law or changes in the law cause stock market development, or whether there exists mutual causation, we use panel VAR (Vector-Autoregressive) and VEC (Vector Error Correction) Granger causality tests. We fit a regression where X (alternative stock market variables taken one at a time) is a function of its own past values and of past values of the control variable Y (real GDP growth rate) and Z (the shareholder protection index):

$$X_{it} = \alpha + \sum_{j=1}^{p} \lambda_j X_{i,t-j} + \sum_{k=1}^{p} \psi_k Y_{i,t-k} + \sum_{l=1}^{p} \pi_l Z_{i,t-l} + \varepsilon_{it} \qquad (1)$$

In fitting the above equation, we have to test whether the coefficients of the lags of Z are jointly significant (that is, different from zero) using the Wald-test statistic (having a chi-square distribution). The null hypothesis is that $\pi_1=\pi_2 =\ldots =\pi_r = 0$. If the Wald test statistic (distributed as chi-square) calculated on the basis of this null hypothesis is very high (higher than the relevant critical value of chi-square distribution), we can say that Z causes X (rejecting the null hypothesis of no causality) as the past values of Z influence the current value of X.

Similarly, to test whether X causes Z, we fit a regression where Z is a function of its past values and the past values of X and Y and test the joint significance of the coefficients of the lags of X. Instead of fitting the equation in level terms we can fit the

[3] http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

equation in first-difference terms (ΔX, ΔY and ΔZ) and their various lags. Replicating the VAR test in terms of first-difference we can get a VEC causality test.

For the choice of lag (that is, how many past years are to be included in the causality test), we use a number of criteria including the sequential modified LR test statistic (LRM), the final prediction error (FPE), the Akaike information criterion (AIC), the Schwarz information criterion (SC), and the Hannan-Quinn information criterion (HQ). Different criteria tend to suggest different lag lengths. We have taken the maximum of the alternative lag lengths chosen by these criteria as the order of the VAR causality tests. Subtracting one from the order of the VAR test we get the order of the VEC test.

Our Granger causality tests give only the direction of causality but do not give the nature of the relationship. So we have to use a different regression models to estimate the relationship, following Pesaran et al (1999). We consider the long-run relationship involving X (stock market development indicators), Y (real growth rate of GDP) and Z (shareholder protection index, SPI):

$$X_{it} = \psi_i Y_{it} + \pi_i Z_{it} + \eta_{it} \qquad (2)$$

where i (=1,2,3..) represents countries, t (=1,2,…) represents periods (years), ψ_i and π_i are the long-run parameters, and η_{it} is the error term.

Conventional panel data analysis (for example, La Porta et al., 1998; Guillen and Capron, 2016) in effect treats the relationship between legal change and economic outcomes as instantaneous. By contrast, the models proposed by Pesaran et al. (1999) make it possible to model the impact of legal change in terms of an initial short-term relationship, followed by an adjustment path which generates a long run relationship. This captures in a formal way the intuition that legal change will often generate an effect after a lag or delay of some kind, as well as the possibility that short-run and long-run outcomes may differ in both direction and magnitude, as firms adjust to and absorb the impact of a regulatory 'shock' (for further discussion of these effects, see Deakin et al., 2014).

Thus following Pesaran et al. (1999), we use the following error correction representation:

$$\Delta X_{it} = \theta_i \left(\eta_{it-1}\right) + \sum_{j=1}^{p-1} \lambda_{ij} \Delta X_{i,t-j} + \sum_{k=0}^{q-1} \psi_{ik} \Delta Y_{i,t-k} + \sum_{l=0}^{r-1} \pi_{il} \Delta Z_{i,t-l} + \mu_i + \phi_{it} \qquad (3)$$

where Δ is the difference operator, θ_i is the country-specific error-correcting speed of adjustment term, λ_{ij}, ψ_{ik} and π_{ij} are the coefficients of the lagged variables, μ_t is the country fixed effect and ϕ_{it} is the disturbances term. The existence of a meaningful long-run relationship with a stable adjustment dynamics requires $\theta_i < 0$.

Under this general structure, Pesaran et al. (1999) suggest three alternative models. On one extreme, there is the dynamic fixed effect models (DFE) in which intercepts are allowed to vary across the countries and all other parameters and error variances are con-

strained to be the same. At the other extreme, the mean group (MG) model enables us to estimate separate equations for each country and to calculate the mean of the estimates, providing us with a glimpse of the overall picture. Pesaran and Smith (1995) showed that the MG approach gives consistent estimates of the averages of parameters. The intermediate alternative is the pooled mean group (PMG) estimator, which allows intercepts, short-run coefficients and error variances to differ freely across the countries but the long run coefficients are constrained to be the same; in other words, $\psi_i = \psi$ and $\pi_i = \pi$ for all i while θ_i may differ from group to group. The PMG model is intuitively appealing for panel data analysis of the effects of legal changes because it is based on the assumption that while the initial effects of a global regulatory 'shock' are likely to differ from one system to the next, thanks to country-level heterogeneities, over time there should be a degree of convergence as economies respond in a similar way to a common institutional environment.

We use the STATA model developed by Blackburne and Frank (2007) to estimate the three alternative models (MG, PMG and DFE). The lag structure (p, q, r) is determined with the help of the Lag Exclusion Wald Test for each variable separately (within the maximum lags chosen in the relevant panel VEC causality tests). A series of Hausman tests (MG vs. PMG, DFE vs. MG and DFE vs. PMG) are then carried out to identify the most appropriate model in each case.

4. Results and interpretation

Tables 2 and 3 (see Data Appendix) report our results. We see from Table 2 that the Granger causality tests do not disclose any evidence of a causal impact of changes in shareholder protection laws on stock market development indicators. However, they do suggest that changes in stock market variables may have influenced the adoption of shareholder protection laws, as the Table 2B reports significant causal influence of SPI on the volume of shares traded and the turnover ratio.

Table 3 reports the results of our dynamic panel data analysis. They show no significant impact of shareholder rights on stock market development for two out of the three models (the DFE and MG models). In the case of the PMG model, on the other hand, they show a significant, positive long-term impact of shareholder protection on three of the stock market variables (market capitalisation, value of shares traded, and turnover ratio), and a negative one in the case of the fourth (number of listed companies).

The Hausman test suggests that the PMG model is the most reliable one only in the case of the finding that shareholder protection impacts negatively on the number of listed companies. In the case of market capitalisation, the Hausman test is unable to identify an appropriate model. In the case of shares traded and the turnover ratio, the DFE model is chosen; this indicates a negative, although non-significant, impact of shareholder protection on stock market development.

These results disclose no clear evidence of a positive effect of shareholder rights on stock market development and suggest, on the contrary, some negative impact. The reduction in the number of listed companies which we observe as an effect of increases in the SPI can be interpreted as evidence of managers de-listing firms in response to laws

and regulations empowering shareholders (see Armour et al., 2009a). It can also be read as implying that increases in shareholder rights have a non-linear relationship with corporate governance outcomes; beyond a certain point, empowering shareholders no longer generates gains in terms of reduced agency costs, but adds to the costs of regulatory compliance and inhibits effective management (Deakin et al., 2012; Katelouzou and Siems, 2015).

Our results also have implications for the understanding of the process by which global trends in corporate governance regulations are translated into financial outcomes at country level. We can see, firstly, that the adoption of national laws empowering shareholders was not simply a response to the emergence, in the 1990s and 2000s, of a new global standard. On the contrary, our Granger causality results suggest that demand for such laws was, at least in part, endogenous to financial development at country level. Granger causality tests are an indication of the historical precedence of one variable over another; in our study, they show that increases in the value of stock trading and in the turnover ratio preceded the legal strengthening of shareholder rights. This is consistent with the view that changes in company law are a response to prior developments in the scale and structure of financial markets.

While it is possible that company law changes can, in turn, trigger or stimulate financial development, it is notable that we do not see clear evidence of this effect in our Granger causality analysis. Our panel data analysis, similarly, shows only weak evidence of a positive impact of shareholder protection on stock market values and trading, and a negative effect on the number of listed companies. It would seem that there has been a tenuous connection, at best, between corporate governance reform and stock market development, over the period of our study.

Some limitations of our approach should be acknowledged. We have presented results from a panel data analysis in which many country-level effects cannot be directly observed. The panel data models we have used make different assumptions about the nature of unobserved cross-country heterogeneity. Making assumptions of this kind is unavoidable in a panel-data analysis which has the merit of identifying trends across a range of countries. The alternative approach would be to study individual systems more closely in order to reveal more of the country-specific effects which we cannot observe in the panel data study. Single country studies or paired comparisons may not be able to produce generalisable findings in the same way that panel studies can, but they may be able to throw more light on the institutional and other factors which mediate the effects of legal and regulatory change at country level. Ideally, panel data approaches and more detailed country studies should be used in conjunction with each other (Buchanan et al., 2014). The present paper suggests that more work can be done on studying country-specific effects of the kind which might be driving our finding of the equivocal and possibly even counter-productive impact of laws and policies aimed at empowering shareholders.

5. Conclusion

In this paper we have presented new evidence on the relationship between changes to laws and regulations affecting corporate governance, on the one hand, and changes in

the structure and scale of financial markets, on the other. Our leximetric evidence on the extent of legal changes affecting shareholder rights shows a high degree of convergence across developed and developing countries in the 1990s and 2000s, with middle income countries, in particular Russia and China, taking the lead in adopting pro-shareholder reforms. Our econometric evidence suggests that while this trend was global in nature, it was not simply a response to the generation of new international standards during the period of the study. On the contrary, analysis using Granger causality techniques suggests that financial development, in the form of increasing stock market values and a higher value of stock trading, preceded legal changes.

However, our dynamic panel data analysis suggests that evidence for the converse effect – namely, the positive impact of legal changes on financial development – is weak and equivocal. We used the pooled mean group regression model to estimate whether a short-term regulatory 'shock' generates a stable adjustment path to a long-term relationship of some kind. Using this approach we find some evidence of a positive long-term effect of increases in shareholder protection on stock market capitalisation, the value of shares traded, and the turnover ratio. However, Hausman tests do not consistently identify the pooled mean group regression as the most appropriate model when compared to models incorporating different assumptions on the likely nature of any consistent or generalisable cross-national effect. For this reason, the positive results we get from the pooled mean group regression must be regarded as provisional until better evidence becomes available. Where we do get an unequivocal result, it shows that a tightening of shareholder protection led to a reduction in the number of listed companies, which suggests that managers, when faced with stricter controls, responded by taking companies private.

The belief that company law reform would lead to financial development in emerging markets has been a core part of the policy of the international financial institutions since the mid-1990s. It is becoming clear, however, that this belief is only partially borne out by the evidence. The emerging picture is, on the one hand, that of the endogenous development of company law in response to trends in financial markets, but, on the other, of a transmission mechanism linking legal reform to economic outcomes which is incomplete at best.

Our results do not in themselves cast doubt on the importance of North's insights on the relevance of property rights for economic growth, but they do suggest that it may be misleading to think of the relationship between legal change and financial development as a straightforwardly linear one. Legal reforms are likely to be stimulated by endogenous demand for property rights protection, rather than operating as a wholly exogenous force, shaping economic outcomes. Thus, in principle, a coevolutionary framework for understanding the law-finance relation, which allows for reciprocal causation and dynamic interactions between the legal and financial systems (Aoki, 2007, 2010; Buchanan and et al., 2014), would seem to be called for.

A dynamic understanding of the law-finance relation would have implications for the design of transnational corporate governance standards, such as those promoted by the World Bank and the OECD. Where changes to the laws of a given country are triggered by external factors such as the influence of international standard-setting bodies, it is

likely that the presence of endogenous demand, coupled with complementary institutions at country-level, will make a difference to the effectiveness of the law in practice. It is likely that we are seeing, in our panel data analysis, only a weak and partial impact of law on financial development, because of the diversity of country-specific factors which mitigate or counteract the influence of legal reforms.

Thus our results suggest that more work needs to be done on understanding the institutional conditions needed for legal reforms to be translated into financial development at country level. They point up the need for empirical analyses which are sensitive to country-level effects which are not easily observable in large panels. In addition they may serve as a cautionary message to policy makers on the limits of what can be achieved through transnational harmonisation initiatives.

Bibliography

Acemoglu, D., Johnson, S., and Robinson, J. (2001) 'The Colonial Origins of Comparative Development: An Empirical Study' *American Economic Review,* 91: 1369-1401.

Aguilera, R. V., Gover, M., and Kabbach de Castro, L. R. (2013) 'Regulation and Comparative Corporate Governance', in *The Oxford Handbook of Corporate Governance* M. Wright, D. S. Siegel, K. Keasey, & I. Filatotchev eds., Oxford: Oxford University Press.

Anderson, H., Gahan, P., Mitchell, R., Ramsay, I. and Welsh, M. (2012b) 'Investor and Worker Protection in Australia: A Longitudinal Analysis', *Sydney Law Review,* 34: 573–85.

Anderson, H., Welsh, M., Ramsay, I. and Gahan, P. (2012a) 'The Evolution of Shareholder and Creditor Protection in Australia: An International Comparison', *International and Comparative Law Quarterly,* 61: 171–207.

Aoki, M. (2007),'Endogenizing Institutions and Institutional Change' *Journal of Institutional Economics,* 3: 1-31.

Aoki, M. (2010) *Corporations in Evolving Diversity: Cognition, Governance and Institutions,* Oxford and New York: Oxford University Press.

Armour, J., Deakin, S., Lele P. and Siems, M. (2009b) 'How Do Legal Rules Evolve? Evidence from a Cross-Country Comparison of Shareholder, Creditor and Worker Protection', *American Journal of Comparative Law,* 57: 579–629.

Armour, J., Deakin, S., Sarkar, P., Siems, M. and Singh, A. (2009a) 'Shareholder Protection and Stock Market Development: An Empirical Test of the Legal Origins Hypothesis.' *Journal of Empirical Legal Studies,* 6: 343–380.

Barker, R. M. (2010) *Corporate Governance, Competition, and Political Parties: Explaining Corporate Governance Change in Europe,* Oxford: Oxford University Press.

Beck, T., Demirgüc-Kunt, A. and Levine, R. (2003) 'Law, Endowments and Finance' *Journal of Financial Economics,* 70: 137-181.

Beck, T., Levine, R. and Loayza, N. (2000) 'Finance and the source of growth.' *Journal of Financial Economic,* 58, 261-300.

Belloc, F. (2013) 'Law, Finance and Innovation: The Dark Side of Shareholder Protection' *Cambridge Journal of Economics,* 37; 863-88.

Blackburne, E. and Frank, M. (2007) 'Estimation of Non-stationary Heterogeneous Panels' *Stata Journal,* 7: 197-208.

Buchanan, J., Chai, D.-H., and Deakin, S. (2014) 'Empirical Analysis of Legal Institutions and Institutional Change: Multiple-Methods Approaches and their Application to Corporate Governance Research' *Journal of Institutional Economics*, 10: 1-20

Cheffins, B. R. (2001) 'Does Law Matter? The Separation of Ownership and Control in the United Kingdom', *Journal of Legal Studies*, 30: 459–84.

Cheffins, B. R. (2008) *Corporate Ownership and Control: British Business Transformed*, Oxford: Oxford University Press.

Chen, V. J.H. (2013) 'The Evolution of Malaysian Shareholder Protection: A Legal Origins Analysis', *Singapore Journal of Legal Studies*, July: 100–124.

Chong, A. and Calderon, C. (2000) 'Causality and Feedback Between Institutional Measures and Economic Growth', *Economics and Politics*, 12: 69–81.

Cioffi, J. W. (2010), *Public Law and Private Power: Corporate Governance Reform in the Age of Finance Capitalism*, Ithaca NY: Cornell University Press.

Claessens, S. and Laeven, L. (2003) 'Financial Development, Property Rights and Growth' *Journal of Finance*, 58: 2401-2436.

Coffee, J. C. (2001) 'The Rise of Dispersed Ownership: The Roles of Law and the State in the Separation of Ownership and Control', *Yale Law Journal*, 111: 1–82.

Deakin, S., Malmberg, J.,and Sarkar, P. (2014) 'Do Labour Laws Increase Equality at the Expense of Higher Unemployment? The Experience of Six OECD Countries, 1970-2010.' *International Labour Review*, 153, 1-27.

Deakin, S., Sarkar, P., and Singh, A. (2012) 'An End to Consensus? The Selective impact of Corporate Law Reform on Financial Development**.'** In Aoki, M., Binmore, K., Deakin, S. and Gintis, H. (eds.) *Complexity and Institutions: Markets, Norms and Corporations*, New York, NY, Palgrave Macmillan.

Dignam, A. and Galanis, M. (2009) *The Globalization of Corporate Governance*, Farnham: Ashgate.

Djankov, S., La Porta, R., Lopez de Silanes F. and Shleifer A. (2008) 'The Law and Economics of Self-Dealing', *Journal of Financial Economics*, 88: 430-65.

Franks, J., Mayer, C. and Rossi, S. (2009) 'Ownership: Evolution and Regulation', *Review of Financial Studies*, 22: 4009–56.

Gelter, M. (2014) 'From Institutional Theories to Private Pensions', Fordham Law Legal Studies Research Paper No. 2463275, forthcoming in *Company Law and CSR: New Legal and Economic Challenges* I. Tchotourian ed., Brussels: Bruylant.

Gilson, R. J. (2001) 'Globalizing Corporate Governance: Convergence of Form or Function', *America Journal of Comparative Law,* 49: 329-57.

Guillen, M. and Capron, L. (2016) 'State Capacity, Minority Shareholder Protections, and Stock Market Development' *Administrative Science Quarterly,* 61: 125-160.

Hansmann, H. and Kraakman, R. (2001) 'The End of History for Corporate Law', *Georgetown Law Journal,* 88: 439-68.

Hyytinen, A., Kuosa, I. and Takalo, T. (2003) 'Law or Finance: Evidence from Finland', *European Journal of Law and Economics,* 16: 59–89.

Katelouzou, D. and Siems, M. (2015) 'Disappearing Paradigms in Shareholder Portection: Leximetric Evidence for 30 Countries, 1990–2013', *Journal of Corporate Law Studies,* 15:127-160.

King, R. and Levine, R. (1993) 'Finance and Growth: Schumpeter Might be Right', *Quarterly Journal of Economics,* 108: 717–737.

Klages, P. (2013) 'The Contractual Turn: How Legal Experts Shaped Corporate Governance Reforms in Germany', *Socio-Economic Review,* 11: 159–84.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (1998) 'Law and Finance', *Journal of Political Economy,* 106: 1113-55.

La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2008) 'The Economic consequences of Legal Origins', *Journal Economic Literature*, 46, 285–332.

Lele, P. and Siems, M. (2007) 'Shareholder Protection – A Leximetric Approach', *Journal of Corporate Law Studies,* 7:17-50.

Levine, R. (1997) 'Financial Development and Economic Growth: Views and Agenda.' *Journal of Economic Literature,* 35: 688-726.

Martynova, M. and Renneboog, L. (2011) 'Evidence on the International Evolution and Convergence of Corporate Governance Regulations', *Journal of Corporate Finance* 17: 1531–57.

Masouros, P. E. (2013) *Corporate Law and Economic Stagnation: How Shareholder value and Short-termism Contribute to the Decline of the Western Economics,* The Hague: Eleven.

McGaughey, E. (2016) 'Does Corporate Governance Exclude the Ultimate Investor?' *Journal of Corporate Law Studies,* 16: 221-240.

Milhaupt, C. and Pistor, K. (2008) *Law & Capitalism: What Corporate Crises Reveal about Legal Systems and Economic Development around the World,* Chicago and London: University of Chicago Press.

North, D. C. (1990) *Institutions, Institutional Change, and Economic Performance*, Cambridge: Cambridge University Press.

North, D. C., Wallis, J. J. and Weingast, B. R. (2009) *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History*, Cambridge: Cambridge University Press.

OECD (2015) *G20/OECD Principles of Corporate Governance Standards* (Paris: OECD).

Olsson, O. (2009) 'On the Democratic Legacy of Colonialism', *Journal of Comparative Economics*, 37: 534–51.

Pesaran, M. H., and Smith, R. (1995) 'Estimating long-run relationships from dynamic heterogeneous panels.' *Journal of Econometrics,* 68, 79-113.

Pesaran, M. H., Shin, Y., and Smith, R. (1999) 'Pooled mean group estimation of dynamic heterogeneous panels.' *Journal of the American Statistical Association,* 94, 621-634.

Pistor, K. (2000) 'Patterns of Legal Change: Shareholder and Creditor Rights in Transition Economies', *European Business Organization Law Review*, 1: 59–107.

Rajan, R. G. and Zingales, L. (2003) 'The Great Reversals: The Politics of Financial Development in the Twentieth Century', *Journal of Financial Economics*, 69: 5–50.

Roe, M. J. (1997) 'Path Dependence, Political Options, and Governance Systems', in K. J. Hopt and E. Wymeersch (eds.) *Comparative Corporate Governance – Essays and Materials*, Berlin: de Gruyter, pp. 165-84.

Roe, M. J. and Siegel, J. I. (2011) 'Political Instability: Effects on Financial Development, Roots in the Severity of Economic Inequality', *Journal of Comparative Economics*, 39: 279–309.

Sarkar, P (2013) 'Does Employment Protection Lead to Unemployment? A Panel Data Analysis of OECD Countries, 1990-2008' *Cambridge Journal of Economics*, 37: 1335-48.

Schnyder, G. (2011) 'Revisiting the Party Paradox of Finance Capitalism: Evidence from Switzerland, Sweden and the Netherlands', *Comparative Political Studies*, 44: 184–210.

Schnyder, G. (2012) 'Varieties of Insider Corporate Governance: the Determinants of Business Preferences and Corporate Governance Reform in the Netherlands, Sweden and Switzerland', *Journal of European Public Policy*, 19: 1434–51.

Siems, M. (2008) 'Shareholder Protection Around the World ('Leximetric II')', *Delaware Journal of Corporate Law*, 33: 111–47.

Siems, M. (2008) *Convergence in Shareholder Law*, Cambridge: Cambridge University Press.

Spamann, H. (2015) 'Empirical Comparative Law' *Annual Review of Law and Social Science*, 11: 131-153.

Van der Elst, C. (2010) 'Law and Economics of Shareholder Rights and Ownership Structures: How Trivial are Shareholder Rights for Shareholders?' (Working Paper). Available at http://ssrn.com/abstract=1553094.

Verkerke, J., and Freyens, B. (2016) 'Mapping Employment Dismissal Law: A Leximetric Investigation of EPL Stringency and Regulatory Style' ILO Research Paper, forthcoming.

Weber, M. (1978) *Economy and Society*. G. Roth and C. Wittich (eds.). Berkeley CA: University of California Press.

World Bank (2003) *Doing Business 2004: Understanding Regulations* (Washington, DC: World Bank).

World Bank (2015) *Doing Business 2016: Measuring Regulatory Quality and Efficiency* (Washington, DC: World Bank).

Data Annex

Table 1. Description and Coding of Variables on Shareholder Protection

Variables	*Description*
1. Powers of the general meeting for de facto changes	If the sale of more than 50 % of the company's assets requires approval of the general meeting it equals 1; if the sale of more than 80 % of the assets requires approval it equals 0.5; otherwise 0.
2. Agenda setting power	Equals 1 if shareholders who hold 1 % or less of the capital can put an item on the agenda; equals 0.75 if there is a hurdle of more than 1 % but not more than 3%; equals 0.5 if there is a hurdle of more than 3 % but not more than 5%; equals 0.25 if there is a hurdle of more than 5% but not more than 10 %; equals 0 otherwise.
3. Anticipation of shareholder decision facilitated	Equals 1 if (1) postal voting is possible or (2) proxy solicitation with two-way voting proxy form has to be provided by the company (i.e. the directors or managers); equals 0.5 if (1) postal voting is possible if provided in the articles or allowed by the directors, or (2) the company has to provide a two-way proxy form but not proxy solicitation; equals 0 otherwise.
4. Prohibition of multiple voting rights (super voting rights)	Equals 1 if there is a prohibition of multiple voting rights; equals 2/3 if only companies which already have multiple voting rights can keep them; equals 1/3 if state approval is necessary; equals 0 otherwise.
5. Independent board members	Equals 1 if at least half of the board members must be independent; equals 0.5 if 25 % of them must be independent; equals 0 otherwise
6. Feasibility of director's dismissal	Equals 0 if good reason is required for the dismissal of directors; equals 0.25 if directors can always be dismissed but are always compensated for dismissal without good reason; equals 0.5 if directors are not always compensated for dismissal without good reason but they could have concluded a non-fixed-term contract with the company; equals 0.75 if in cases of dismissal without good reason directors are only compensated if compensation is specifically contractually agreed; equals 1 if there are no special requirements for dismissal and no compensation has to be paid. Note: If there is a statutory limit on the amount of compensation, this can lead to a higher score.
7. Private enforcement of directors duties (derivative suit)	Equals 0 if this is typically excluded (e.g., because of strict subsidiarity requirement, hurdle which is at least 20 %); equals 0.5 if there are some restrictions (e.g., certain percentage of share capital; demand requirement); equals 1 if private enforcement of directors duties is readily possible.
8. Shareholder action against resolutions of the general meeting	Equals 1 if every shareholder can file a claim against a resolution by the general meeting; equals 0.5 if there is a threshold of 10 % voting rights; equals 0 if this kind of shareholder action does not exist.
9. Mandatory bid	Equals 1 if there is a mandatory public bid for the entirety of shares in case of purchase of 30% or 1/3 of the shares; equals 0.5 if the mandatory bid is triggered at a higher percentage (such as 40 or 50 %); further, it equals 0.5 if there is a mandatory bid but the bidder is only required to buy part of the shares; equals 0 if there is no mandatory bid at all.

10. Disclosure of major share ownership	Equals 1 if shareholders who acquire at least 3 % of the company's capital have to disclose it; equals 0.75 if this concerns 5 % of the capital; equals 0.5 if this concerns 10 %; equals 0.25 if this concerns 25 %; equals 0 otherwise

Source for Table 1: CBR Shareholder Protection Index (Siems, 2008); Centre for Business Research's *Datasets on Law, Development and Finance* (http://www.cbr.cam.ac.uk/research/research-projects/completed-projects/law-finance-development/#item-2).

Table 2

Causal Relationships between Shareholder Protection and Stock Market Development Indicators for the Panel of 28 Countries, 1990-2012: Panel VAR and VEC Granger Causality Tests

Table 2A: Influence of Shareholder Protection on Stock Market Development

(i) Panel VAR Causality Tests

Independent variable	Dependent variable	Test statistic: Chi-square	Lag chosen	Probability
SPI	MKAPY	0.697993	3	0.8737
SPI	VSTKY	1.088249	3	0.7799
SPI	TURNOVER	5.931291	4	0.2043
SPI	LISTPOPM	4.445253	3	0.2172

(ii) Panel VEC Causality Tests

Independent variable	Dependent variable	Test statistic: Chi-square	Lag chosen	Probability
SPI	MKAPY	0.117426	2	0.9430
SPI	VSTKY	0.514655	2	0.7731
SPI	TURNOVER	5.642451	3	0.1304
SPI	LISTPOPM	0.039434	2	0.9805

Table 2B: Influence of Stock Market Development on Shareholder Protection

(i) Panel VAR Causality Tests

Independent variable	Dependent variable	Test statistic: Chi-square	Lag chosen	Probability
MKAPY	SPI	3.432790	3	0.3296
VSTKY	SPI	7.935319*	3	0.0474
TURNOVER	SPI	11.77230*	4	0.0191
LISTPOPM	SPI	0.202371	3	0.9772

(ii) Panel VEC Causality Tests

Independent variable	Dependent variable	Test statistic: Chi-square	Lag chosen	Probability
MKAPY	SPI	2.519774	2	0.2837
VSTKY	SPI	9.751199**	2	0.0076
TURNOVER	SPI	10.68342*	3	0.0136
LISTPOPM	SPI	0.340019	2	0.8437

Notes to Table 2

The null hypothesis of no causality is rejected at the 5 % level (*) and 1% level (**).

MKAPY (stock market capitalisation as a % of GDP), VSTKY (value of stock trading as a % of GDP), TURNOVER (turnover ratio, or ratio of stock trading over stock market capitalisation) and LISTPOPM (listed companies per million of population) are derived from the World Bank's *World Development Indicators*. SPI (shareholder protection index) is derived from the Centre for Business Research's *Datasets on Law, Development and Finance* (http://www.cbr.cam.ac.uk/research/research-projects/completed-projects/law-finance-development/#item-2).

Table 3

Short-run and Long-run Impact of Shareholder Protection Index on Stock Market Development Indicators, 1996-2012: Dynamic Panel Models

3A. Dependent variable: stock market capitalisation (MKAPY)

Independent and control variables	PMG Model	MG Model	DFE Model
Long-term relationship			
GGDP	11.227***	12.326***	3.07***
SPI	1.841***	7.374	-1.907
Short-term relationship			
θ	-.981***	-1.799***	-.655***
$\Delta MKAPY_{t-1}$	-.136	.241	-.009
$\Delta MKAPY_{t-2}$	-.116	.156	-.04
$\Delta GGDP_{t}$	-5.45***	-12.137***	-.87
$\Delta GGDP_{t-1}$	-4.762***	-9.165***	-1.412***
$\Delta GGDP_{t-2}$	-.854	-3.888	-.182
ΔSPI_{t}	3.452	7.304	2.792
ΔSPI_{t-2}	11.807	5.256	-.899
μ	41.119	24.159	48.602***
Chosen Model	?	?	?

3B. Dependent variable: value of stock market trading (VSTKY)

Independent and control variables	PMG Model	MG Model	DFE Model
Long-term relationship		6.866	8.545***
GGDP	1.453***	6.866	8.545***
SPI	2.485***	7.016	-.318
Short-term relationship			
θ	-.302***	-.684***	-.45***
$\Delta GGDP_{t}$	3.333*	-8.715**	-1.792**
$\Delta GGDP_{t-1}$	1.949**	-4.479**	-1.169*
$\Delta GGDP_{t-2}$	1.364	-3.11*	-.828
ΔSPI_{t}	14.537	.541	2.319
ΔSPI_{t-2}	-8.239	-10.769	-1.261
μ	17.182**	124.034*	17.292
Chosen Model			DFE

3C. Dependent variable: turnover ratio (TURNOVER)

Independent and control variables	PMG Model	MG Model	DFE Model	
Long-term relationship			6.866	8.545***
GGDP	4.188***	38.836	5.229	
SPI	9.872***	106.097	-9.145	
Short-term relationship				
θ	-.477***	-.751***	-.352***	
$\Delta TURNOVER_{t-1}$	.283	.992	.021	
$\Delta TURNOVER_{t-2}$	-.272	-.272	.189**	
$\Delta GGDP_{t}$	1.323	6.521	-.147	
$\Delta GGDP_{t-1}$	-6.291	1.13	-.635	
$\Delta GGDP_{t-2}$	.461	-1.958	-.824	
$\Delta GGDP_{t-3}$	1.838	5.296	-.46	
ΔSPI_{t}	-9.988	37.747*	5.129	
ΔSPI_{t-2}	17.657	24.274*	7.322	
μ	4.298	229.352*	41.223**	
Chosen Model			DFE	

3D. Dependent variable: listed companies (LISTPOPM)

Independent and control variables	PMG Model	MG Model	DFE Model	
Long-term relationship			6.866	8.545***
GGDP	11662.16***	45766.45	19540.66	
SPI	-53189.21***	94541.25	6146.84	
Short-term relationship				
θ	-.174***	-.476***	-.211***	
$\Delta GGDP_{t}$	-929.859	2008.633	-2462.576	
$\Delta GGDP_{t-1}$	-2655.137	-994.893	-2273.997	
$\Delta GGDP_{t-2}$	-2782.525	-3155.08	-1816.297	
ΔSPI_{t}	-8160.028	-572.612	-5462.063	
μ	169532.5***	541733.3*	98451.4	
Chosen Model	PMG			

Notes to Table 3

Significances are reported at the 10% level (*), 5 % level (**) and 1% level (***).

MKAPY (stock market capitalisation as a % of GDP), VSTKY (value of stock trading as a % of GDP), TURNOVER (turnover ratio, or ratio of stock trading over stock market capitalisation) and LISTPOPM (listed companies per million of population) are derived from the World Bank's *World Development Indicators*. SPI (shareholder protection index) is derived from the Centre for Business Research's *Datasets on Law, Development and Finance* (http://www.cbr.cam.ac.uk/research/research-projects/completed-projects/law-finance-

development/#item-2). An appropriate model is chosen on the basis of a series of Hausman tests. In one case marked by '?' these tests cannot ascertain the appropriate model.