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the Creditor Rights Index revisited

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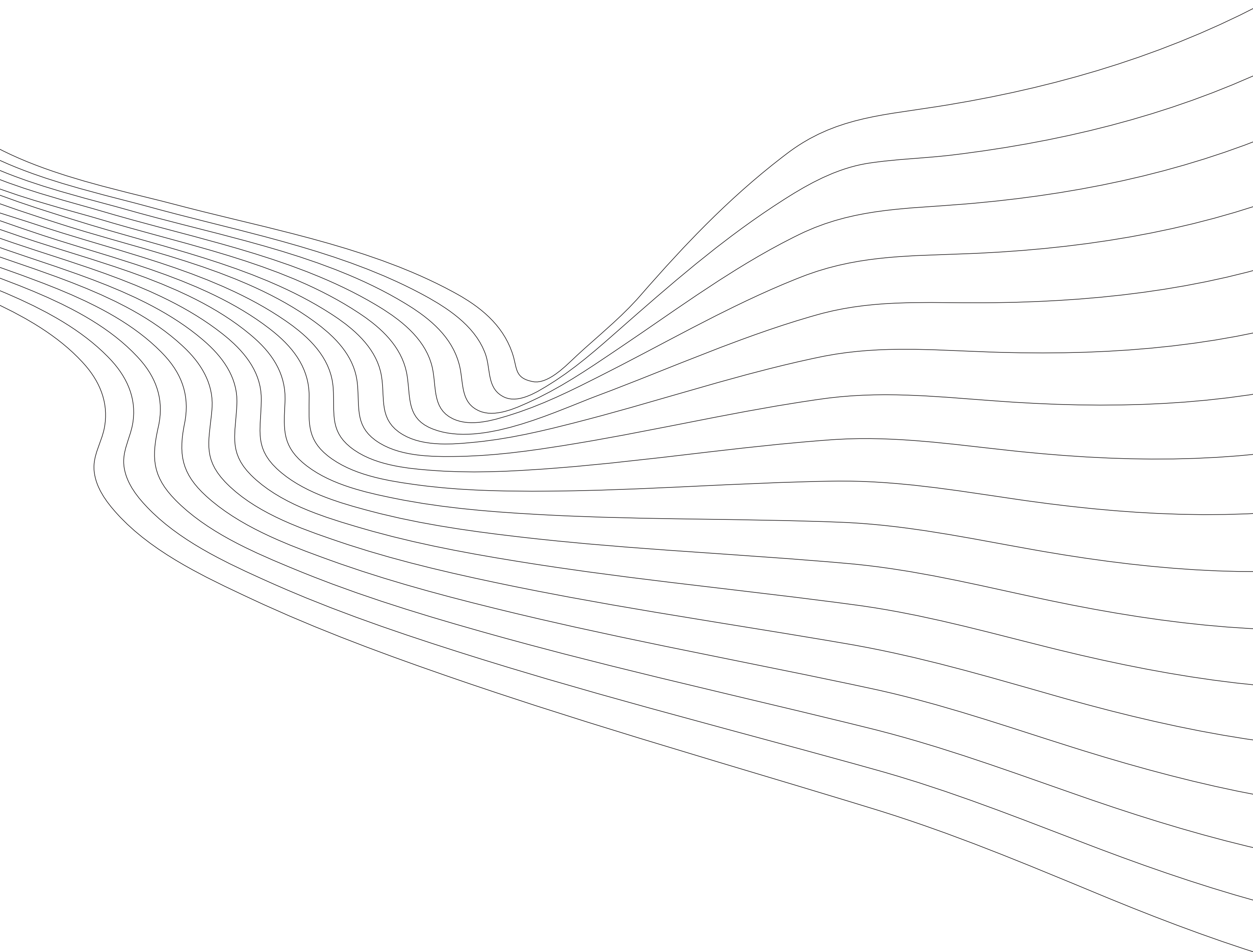

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Abstract:

The "law and finance theory" predicts that the common law system provides the best basis for financial development and economic growth, followed by Scandinavian and German origin civil law and finally French origin civil law. This paper summarises the key points of the theory as well as a number of sceptical views. Moreover, it argues that the theory faces an identification problem, since the majority of common law countries have a market-based financial system, whereas the majority of civil law countries have a bank-based financial system. Furthermore, it is shown that one of the corner stones of the law and finance theory, its proposition that a common legal tradition implies a similar set of legal rules and procedure to protect financial investors, does not hold empirically. Last but not least, it is shown that recent additions to the theory's creditor right indicators data pool are eliminating the (weak) correspondence between business law and legal family that could be found in the original data set. Accordingly, the theory's claim that creditor protection is largely determined by the legal tradition of a particular country has to be reconsidered.

JEL categories: K22, G20, P00

Keywords: Legal Tradition, Creditor Rights

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1 Introduction

The "law and finance theory" argues that the legal system, which today's countries inherited from the past, is crucial in the way it is favouring financial development. Moreover, as financial development is nowadays widely regarded as a driving force of economic growth, the legal system is perceived as an ultimate cause of economic growth and development. Apart from this, the theory identifies two dominating legal traditions, the common law tradition inherited from England, and the civil law tradition that is going back to 19th century codifications in France, Germany and Scandinavia. The major conclusion is that the common law system provides the best basis for financial development and economic growth, followed by Scandinavian and German origin civil law and finally French origin civil law.

This paper will first give a short summary of the main assumptions, hypotheses and findings of the theory. It will then review some of the critical views. Finally, it will take a closer look at some of the data that constitute the empirical basis of the theory, including some recent extensions that have considerably broadened the country coverage. It will be shown that major predictions of the theory are not supported.

2 The law and finance theory

Less than ten years after the seminal contributions – two widely cited papers by LA PORTA, LOPEZ-DE SILANES, SHLEIFER AND VISHNY (1997, 1998; henceforth LLSV) – the finance and law literature has produced its first synthesis. Written by two insiders, BECK AND LEVINE'S "Legal Institutions and Financial Development" (2005) gives an authoritative overview over this research programme, its foundations, assumptions, data and its main findings. In particular, BECK AND LEVINE (2005, p. 251) argue that the law and finance theory explains why "some countries have well-developed growth-enhancing financial systems, while others do not", and why "some countries developed the necessary investor protection laws and contract-enforcement mechanisms to support financial institutions and markets, while others have not." The theory's ability to answer these questions is attributed to two related hypotheses (op. cit., p. 251 f):

(1) "[I]n countries where legal systems enforce private property rights, support private contractual arrangements, and protect the legal right of investors, savers are more willing to finance firms and financial markets flourish."

(2) "The different legal traditions that emerged in Europe over previous centuries and were spread internationally through conquest, colonization, and imitation help explain cross-country differences in investor protection, the contracting environment, and financial development today."

Two mechanisms are held responsible for these outcomes (op. cit., p. 252):

(1) A *political mechanism* that refers to a difference between legal traditions "in terms of the priority they attach to private property vis-à-vis the rights of the State" and

(2) An *adaptability mechanism*, referring to formalism that may impair the legal system's capability to "minimize the gap between the contracting needs of the economy" and the normative status quo.

The microeconomic foundation of the theory is the "willingness to invest". On this basis, it argues that a major function of corporate law is to ameliorate the inherent risk involved in financial contracts due to informational asymmetry and moral hazard or outright fraud. Accordingly, to the degree that the legal system offers effective protection against the occurrence and, if necessary, the consequences of these types of market failure or deception, financial investors will be more inclined to lend (directly on financial markets or via financial intermediaries). Notwithstanding the differences between equity and debt finance, a unifying notion in the law and finance theory is the distinction between insiders (stakeholders like "the State" or the workers) and outsiders (shareholders as well as creditors). The legal system's support to outsiders, which is likely to increase their willingness to invest, is expected to be beneficial to financial development, whereas a strong position of insiders would be detrimental.

The original contribution of the law and finance theory is how it combines these well-established ideas and assumptions with its peculiar view of legal history. Let us therefore take a closer look at how the theory deals with the historical legacy of law.

The civil-law family goes back to the Roman Empire, the first society with a statuary law. Its contemporary successors are French, German and Scandinavian branches. The theory's view of the French legal system is that it "evolved as a regionally diverse mélange of customary law, law based on the Justinian texts, and case law." However, "by the 18th century, there was a notable deterioration in the integrity and prestige of the judiciary. The Crown sold judgeships to rich families and the judges unabashedly promoted the interests of the elite and impeded progressive reforms. Unsurprisingly, the French Revolution turned its fury on the judiciary and quickly strove to (a) place the State above the courts and (b) eliminate jurisprudence. ... Napoleon sought a code that was so clear, complete, and coherent that there would be no need for judges to deliberate publicly about which laws, customs, and past experiences apply to new, evolving situations. Furthermore, this approach required a high degree of procedural formalism to reduce the discretion of judges …" (op. cit., p. 254 f). In contrast to this, the German legal system is seen as the result of an evolution rather than a revolution. When Bismarck decided "to codify and unify the whole of private law in Germany that led to the adoption of the German civil law in 1900", Germany had a history of "deliberations that illustrated how courts weighted conflicting statutes, resolved ambiguities, and addressed changing situations." Hence, there was "a dynamic, common fund of legal principles that then formed the basis for codification in the 19th century. Moreover, in contrast to the revolutionary zeal and antagonism toward judges that shaped the Napoleonic Code, German legal history shed a much more favorable light on jurisprudence and explicitly rejected France's approach. ... Whereas the Napoleonic code was designed to be immutable, the Bürgerliches Gesetzbuch was designed to evolve." (op. cit., p. 266). Regarding the Scandinavian civil-law family, the theory it is not very explicit, but it stresses that like Germany, Scandinavia rejected the legal traditions brought about by the French Revolution.

The other major legal legacy, common law, is characterised as (op. cit., p. 257 f) "unique both in terms of (a) the relationship between the State and the Courts and (b) jurisprudence. … English law evolved based on the resolution of specific disputes and increasingly stressed the rights of private property [and] the courts developed legal rules that treated large estate

holders as private property owners and not as tenants of the king. Indeed, the common law at the dawn of the 17th century was principally a law of private property. ... In terms of legal formalism, English law typically imposes less rigid and formalistic requirements ... In terms of jurisprudence, the English common law tradition is almost synonymous with judges having broad interpretation powers and with courts molding and creating law as circumstances change … rather than adhering to the logical principles of codified law."

How does this view of the history of law combine with the theory's focus on lenders' property rights? The conclusion can only be that common law is adequately flexible to deal with financial contracts that are contingent on a host of foreseeable and unforeseeable states of nature and business. For the civil-law family, the conclusions will be mixed. While the revolutionary attempt to establish a permanent order of reason through codified, positive law is the antithesis to flexibility, the German and Scandinavian systems, having rejected the French approach, are perceived to be somewhat less inadequate.

Accordingly, with respect to the *adaptability mechanism* the theory predicts the following ranking of legal systems. Common law is superior, German and Scandinavian civil law are intermediate, and French civil law is inferior.

Regarding the *political mechanism*, the law and finance theory perceives "the State" as potentially harmful by interfering with the activity of private economic agents. In Beck and Levine's words (op. cit., p. 260): "A powerful State with a responsive civil law at its disposal will tend to divert the flow of society's resources toward favored ends, which is antithetical to competitive financial markets."[1] The *political mechanism* hence implies a binary classification of legal systems in terms of appropriateness to promote financial development.

The theory of law and finance thus combines a specific interpretation of the history of law with two proposed mechanisms that may affect the willingness to invest. It predicts that common law countries should have a legal system that effectively guarantees the highest level of protection to financial investors, followed by Scandinavian and German origin civil law countries, whereas French legal origin should yield the poorest results.

3 The theory in practice

A straightforward application of the theory is to compare investor protection across countries belonging to the different legal traditions, and this is precisely what LLSV undertake in their seminal papers. To this end, they collect and process information on commercial law and procedural regulations relating to shareholders and creditors from 49 countries. This exercise in comparative analysis of contemporary law results in eight variables that characterise various aspects of shareholder rights (six of them binary and two continuous), and in five variables that characterise creditor rights (four of them binary and one continuous). These variables are defined as follows (LLSV 1998, Table 1):

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[1] Note that what Beck and Levine are describing here is an interventionist state rather than a civil law country; and while it may be true that interventionist policy is encountered relatively more frequently in countries with a civil law tradition, the two phenomena may be fundamentally unrelated. An alleged causality between civil law and interventionism would hence merit more elaboration. How a civil law background would make the state prone to interfere with the functioning of financial markets, or how civil law would make it difficult to credibly commit not to interfere, remains very unclear.

Shareholder rights

One share-one vote: one if the Company Law or Commercial Code of the country requires that ordinary shares carry one vote per share, zero otherwise. Equivalently, this variable equals one if the law prohibits the existence of both multiple-voting and non-voting ordinary shares and does not allow firms to set a maximum number of votes per shareholders irrespective of the number of shares she owns; zero otherwise.

Proxy by mail: one if shareholders are allowed to mail their proxy vote; zero otherwise.

Shares not blocked: one if firms are not allowed to require that shareholders deposit their shares prior to a General Shareholder Meeting thus preventing them from selling those shares for a number of days; zero otherwise.

Cumulative voting: one if shareholders are allowed to cast all of their votes for one candidate standing for election to the board of directors (cumulative voting) or if there is a mechanism of proportional representation in the board by which minority interests may name a proportional number of directors to the board; zero otherwise.

Oppressed minority: one if minority shareholders are granted either a judicial venue to challenge the decisions of management or of the assembly or the right to step out of the company by requiring the company to purchase their shares when they object to certain fundamental changes, such as mergers, assets dispositions and changes in the articles of incorporation; zero otherwise. Minority shareholders are defined as those shareholders who own 10% of share capital or less.

Pre-emptive rights: one if shareholders are granted the first opportunity to buy new issues of stock and this right can only be waived by a shareholder vote; zero otherwise.

Extraordinary meeting: minimum percentage of ownership of share capital that entitles a shareholder to call for an extraordinary shareholders' meeting. It ranges from one to 33%.

Mandatory dividend: equals the percentage of net income that firms are required to distribute as dividends among ordinary shareholders; zero for countries without such a restriction.

Creditor rights

Reorganisation: one if a reorganisation procedure imposes restrictions, such as creditors' consent to file for reorganisation; zero for countries without such restrictions.

No automatic stay: one if a reorganisation procedure does not impose an automatic stay on the assets of the firm upon filing the reorganisation petition; zero otherwise

Secured first: one if secured creditors are ranked first in the distribution of the assets of a bankrupt firm; zero if non-secured creditors, such as the government and workers, are given priority.

No management stay: one if an official appointed by the court, or by the creditors, is responsible for the operation of the business during reorganization; equivalently if the debtor does not keep the administration of its property pending the resolution of the reorganization process; zero otherwise.

Legal reserve: minimum percentage of total share capital mandated to avoid dissolution of an existing firm; zero for countries without such restriction.

These indicators obviously capture interesting features of shareholders' and creditors' positions in corporate finance. Now, to condense this information, LLSV propose two indices, which they call "anti-director rights" and "creditor rights". The anti-director rights index results from adding "Proxy by mail", "Shares not blocked", "Cumulative voting",

"Oppressed minority", "Pre-emptive rights" plus one if "Extraordinary meeting" is less than or equal to 10% (the sample median). This index thus ranges from one to six. The creditor rights index results from adding the four binary creditor rights variables, i.e. "Reorganisation", "No automatic stay", "Secured first" and "No management stay". It hence ranges from zero to four.

Recall that the law and finance theory predicts that common law countries should perform better than civil law countries in protecting both shareholders and creditors, and that the French legal legacy would produce the most unfavourable results. Comparing the index means across groups of countries belonging to the same legal tradition, this is exactly what LLSV read from their data. The common law countries show an average of 4.00 on the anti-director rights index, whereas the Scandinavian, German and French civil law country averages are 3.00, 2.33 and 2.33, respectively. Accordingly, as predicted, the common law countries seem to offer better shareholder protection on average than the civil law countries. Though the ranking within the civil law family is not exactly in line with the theory, which would have the French system perform worst, the evidence nevertheless seems favourable with respect to the basic distinction of law families. Regarding the creditor rights index, the common law countries on average score highest with 3.11, whereas the Scandinavian, German and French law family groups' scores are 2.00, 2.33 and 1.58. Accordingly, LLSV (1998, p. 1139) conclude that both indices support the law and finance theory and that it "is not the case that some legal families protect shareholders and others protect creditors."

This is an impressive finding. On this basis, these indices are widely accepted as a verification of the first link in the theory of law and finance's causal chain that runs from legal origin to financial development.[2]

4 Sceptical views

While the theory of law and finance is generally regarded as a major achievement and its key texts are now standard references in the field of finance and development, a number of sceptics have formulated their doubts. In this section, we shall discuss some of the typical criticisms that have been brought forward so far.

A frontal attack holds that the law and finance theory is a skilful piece of "pro markets" ideology, designed to deliver a rationale to the alleged superiority of the Anglo-Saxon model of corporate finance (SINGH ET AL. 2001). While there may be some truth in this argument, this is certainly not sufficient to invalidate the theory and its predictions, which are a set of hypothesis with indisputable empirical content.

To deconstruct empirical approaches, one can claim that the links are flawed, that the facts are flawed, or identify contradictory facts that falsify the theory, and indeed, the finance and law theory has been criticised along these three lines.

Some concerns have been raised about the law and finance theory's division into major legal families and about a limited number of assignments of countries to a specific group that

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[2] This paper does not deal with the second link (financial development – economic growth); see GRAFF (2006) for a discussion on how this link is addressed by proponents of the theory.

may be open to doubts.[3] Yet, the classification is widely accepted as basically sound, so that this line of criticising is constructive and aims at eliminating minor deficiencies of the theory.

A more challenging critique refers to the observation that the majority of the legal systems were spread around the world together with the financial systems of the originating countries, so that the law and finance theory faces an identification problem. In particular, FOHLIN (2000) shows that common law was generally imported together with the English financial system, so that the alleged causal impact of the legal tradition cannot be separated from the coincident transplantation of a wider range of institutions from England. What the theory attributes to legal origin should accordingly rather be interpreted as a result of the financial system that the country inherited.

Let us consider this point in some depth: the Anglo-Saxon financial system is usually described as "market-based" and "specialised", whereas the continental systems as well as Japan's are labelled as predominantly "bank-based" and "universal". Along these distinctions, there is a lively academic discussion about normative and theoretical questions,[4] but it has proven notoriously difficult to construct corresponding empirical classifications of the world's financial systems. Nevertheless, a few attempts covering a reasonably large number of countries have been documented so far. On this basis, LEVINE (2002) performs extensive cross-country analyses to detect a possible supremacy of either market-based or bank-based financial systems, but he concludes that while there is evidence for the importance of the *level* of financial development, the *type of system* does not seem to matter. DEMIRGUÇ-KUNT and MAKSIMOVIC (1998, 2002) analyse firm-level data across countries and find that firms' access to external finance is positively related to the level of financial development, but not to the expansion of the capital market relative to the banking sector. FOHLIN (2000) develops a classification of financial systems for 26 countries ranging back to the 19th century and concludes that until recently, the typology of financial systems was remarkable stable over time, but that economic history over the last 150 years does not support the view that any specific system provided a superior environment to achieve economic prosperity; in the long term, the type of legal system does not seem to have had any perceivable impact on economic growth. Though these studies suffer from the inherent difficulty to classify the world's economies along a binary category, the fact that they fail to come up with significant outcomes with respect to "bank-based" versus "capital market-based" supports the argument that it is the quality rather than the specific type of financial system that matters for growth and development. Hence, if legal origin were a reliable predictor for the quality rather than thy type of a country's financial system, the law and finance theory would indeed highlight an important link.

We now turn to sceptical views that cast doubt on this link. A theory is flawed if other causes than those claimed by the hypotheses of the theory are responsible for an observable outcome. Though alternative, competing hypotheses for an observed phenomenon that are just as plausible, or even more plausible, than the original proposition, cannot *falsify* a theory, they can nevertheless contribute to make it seem less likely. Regarding the finance and law theory, this type of criticism has been brought forward in manifold ways. This critique thus accepts as fact that common law countries protect investors better than German and Scandinavian civil law countries and that

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3 See e.g. BERKOWITZ ET AL. (2003).

4 See e.g. ALLEN AND GALE (1995) and LEVINE (2002).

investor protection in these is in turn better than in French civil law countries, but it disputes that a country's legal origin is responsible for this outcome.

Along these lines, it has been argued that a "transplant effect", i.e. the way in which the original legal system was transferred to receiving countries, rather than the legal origin itself, is responsible for the quality of investor protection (BERKOWITZ ET AL. 2003).

Others have undertaken to show that LLSV's anti-director and creditor rights indices are better explained by a country's predominant religion rather than by its legal origin and conclude that the true causal chain runs from religion to investor protection (STULZ AND WILLIAMSON 2003).

Still others refer to cultural characteristics. LICHT ET AL. (2001) submit the LLSV data to a secondary analysis and find that cultural dimensions (measured by world wide socio-psychological surveys) are at least as effective as the legal origin in explaining the inter-country variation in the legal characteristics of the financial system. High scores on the anti-director rights index are associated with an English speaking country group that is to a large extent identical with the common law group and very similar in cultural terms. On the other hand, the cultural dimension performs better to distinguish between the high and low creditor rights country groups than the common versus civil law distinction. According to this finding, it seems more likely that common characteristics of the predominantly English speaking and common law country group go hand in hand with a comparable set-up of the securities market, but differences in credit and banking should be attributed to other factors than the legal tradition, such as national culture, which may, but need not, coincide with the inherited legal tradition.

Yet another argument refers to climatic conditions that either made overseas colonies attractive for European settlers or turned them into predominantly "extractive" colonies otherwise, which resulted in comparatively lower institutional quality in the latter than in the former (ACEMOGLU ET AL. 2001, 2002). Accordingly, the climate is regarded as alternatives to legal origin in predicting institutional quality.[5]

Furthermore, RAJAN AND ZINGALES (2003) argue that financial development has undergone major "great reversals" and while the common law countries nowadays tend to have more developed arm's length finance, in the beginning of the 20th century the civil law countries were more advanced in this respect. Their explanation is that civil law is likely to give more influence to important "incumbents" in shaping corporate law, and the great reversal of the 20th century was that in the initial free trade regime incumbents promoted financial development, whereas the breakdowns of the free trade regime during World Wars I and II and the protectionism they initiated made incumbents opt for financial repression[6] to secure their rents.[7]

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5 The proponents of the law and finance theory have been quite receptive to what they call the "endowment view" and rarely fail to mention this as an alternative explanation; see in particular BECK ET AL. (2003).

6 See SHAW (1973) and MCKINNON (1973) for seminal works on the concept of "financial repression".

7 The "great reversals" theory is another view that the finance and law theory has readily accepted as an important critique (see BECK ET AL. 2003). Yet, it is an extension of the law and finance theory rather than a critique, since it delivers a plausible story for the political mechanism which the original contributions fail to provide.

Finally, a link between property rights and financial development can be addressed without imposing the legal origin paradigm that unifies the law and finance theory.[8] This allows for more flexibility in accurately tracing differences in the factual quality of law, so that the results of this competing approach seem theoretically less appealing, but more informative from an applied point of view.

In sum, it is fair to conclude that alternative hypotheses explaining the different levels of investor protection, or in more general terms, the quality of the financial system, are indeed offering plausible alternatives to the law and finance theory. Yet, they do not rule out that the theory may highlight important links between legal tradition and financial development.

Let us therefore turn to the law and finance indicators originally put together by LLSV (1998) and since referred to in an impressive number of papers. First, we shall briefly examine in how far the sceptics maintaining that what LLSV identify as the fundamental source of variation in investor protection is actually a distinction between the capital market-based, arms' length, English origin financial system versus the bank-based, relationship oriented, Continental origin financial system rather than the a distinction between the origins of the legal family. To this end, we refer to an index developed by Demırguç-Kunt and Levine and designed to reflect the structure of a country's financial system in the late 20th century on a spectrum from more bank-based to more market-based which Demırguç-Kunt and Levine recode into a binary market versus bank-based variable.[9] As mentioned above, it is notoriously difficult to propose a solid empirical decomposition of the world's financial systems into two groups, and different vintages of this variable actually differ in how a number of countries are classified. Yet, any sensible attempt to get an empirical hold of the bank-based versus capital market-based dichotomy can only be welcomed. Referring to the binary variable "market" from the DEMIRGUÇ-KUNT AND LEVINE (2001) data supplement, the common law countries' mean score equals 0.61, implying that 61% of the common law countries are classified as having market-oriented financial systems against only 39% that are classified as bank-based. For the civil law countries, the finding is practically reversed, 68% fall into the bank-based category and only 32% are classified as market-based. While this is clearly not a perfect correspondence of common law with market-based and civil law with bank-based, the difference is statistically significant at the 5% level ($F = 4.03$).

Now, since the "market" variable results from a dichotomisation of a continuous variable, this relatively clear result could be due to an arbitrary aggregation. It is easy to show that this is not the case. If we compare the group means for civil and common law countries of the underlying continuous structure index, the differences are statistically even more pronounced; the F-statistics jumps to 8.30, passing a 1% test for difference of group means. Accordingly, accepting that the structure index captures essential features of the bank-based versus market-based paradigm, the law and finance theory indeed faces an identification problem. However,

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[8] A large body of literature beyond the law and finance theory deals with institutions and growth; see e.g. KNACK AND KEEFER (1995), GROGAN AND MOERS (2001) and CLAESSENS AND LAEVEN (2002).

[9] The dummy variable "market" was first introduced by DEMIRGUÇ-KUNT AND LEVINE (1999). It is obtained by recoding one for positive and zero for negative values of a continuous "structure index", where the latter is the average of the deviations from the mean for (1) the inverse of the size of banking sector relative to stock market (approximated by deposit money bank assets divided by stock market capitalisation), (2) the inverse of activity of banking sector relative to stock market (approximated by claims on private sector by deposit money bank divided by total value traded) and (3) the efficiency of stock markets relative to the banking sector (approximated by total value traded as share of GDP * overhead costs). Higher values are supposed to indicate a more market-based financial system.

since the correspondence is far from perfect, the legal family origin might still reveal essential features beyond the financial system paradigm.

Referring to the core argument of the finance and law theory, let us hence see whether there are differences in LLSV's measures of investor protection that are related to legal origin, but not to the type of financial system as classified by Demırguç-Kunt and Levine. To this end, Table 1 shows the group means for the anti-director rights and the creditor rights indices for common versus civil law countries and bank-based versus market-based financial systems.

Table 1: LLSV's investor protection indices by legal family and type of financial system

Legal origin	Anti-director rights index	Creditor rights index	Financial system	Anti-director rights index	Creditor rights index
Civil law	2.42 (n = 31)	1.79 (n = 29)	Bank-based	2.61 (n = 28)	2.44 (n = 27)
Common law	4.00 (n = 18)	3.11 (n = 18)	Market-based	3.52 (n = 21)	2.10 (n = 20)

As can be seen in the left panel of Table 1, the group means of LLSV's investor protection indices for shareholder and creditor rights are both higher for the common law countries. Moreover, analysis of variance confirms that both differences are statistically significant at the 1% level (F = 24.97 for anti-director rights and 13.05 for the creditor rights index, respectively). However, as the right panel of Table 1 shows, the market-based financial system group scores higher on the anti-director rights index, but *lower* on the creditor rights index. For the anti-director rights index, the difference is again statistically significant (F = 6.59), but not for the creditor rights index (F = 0.73, corresponding to p = 0.4). Nevertheless, the group means of the creditor protection are contrary to what one would expect if one held the market-based type of financial system for superior in both shareholder and creditor protection.

Accordingly, if we are prepared to put trust in the LLSV investor protection indices and the financial system classification by Demırguç-Kunt and Levine, we must conclude that market oriented financial systems protect shareholders better than bank-based financial systems, but not creditors, where the difference is rather tipping to the other side. In other words, the law and finance theory indeed appears to explain *general* superiority of investor protection in common law countries. This is a neat result, but as we have stressed, it rests on the assumption that the financial system classification as well as the investor rights indices are valid instruments to capture what they are designed to. We leave the financial system classification aside and now proceed to an assessment of the theory's measurement of investor rights.

Referring to the cross country data on investor protection which accompanied the seminal papers of the theory, a recent re-analysis (GRAFF 2006) demonstrates that the LLSV indicators neither constitute a one- nor a two-dimensional space. Yet the law and finance theory predicts

that legal origin should determine both creditor and shareholder protection along similar lines. Accordingly, the LLSV indicator set should reflect different surface phenomena that emerge from a common underlying variable "investor protectiveness" which in turn is rooted in the legal tradition. Translated into quantitative statistics, if this conjecture were true, a factor analysis should confirm that the total variance of the indicators can reasonably be attributed to a single factor. However, as GRAFF (2006) shows, a principal component analyses comprising the ten shareholder and creditor rights indicators that LLSV chose to include into their indices clearly rejects a one factor solution. The first principal component reproduces only 26% of the indicator set's variance. Moreover, three out of ten loadings (correlations of the variables with the first principal component) are negative, whereas LLSV consistently assign higher values to their indicators for better protection. Furthermore, the communalities (squared factor loadings, indicating the shares of variance of the indicators reproduced by the first component) show that some indicators do virtually have nothing in common with the first component. Accordingly, these data do not support a one-dimensional notion of investor protection.

Now, though LLSV claim that investor protection is a universal feature, they nevertheless group their indicators into shareholder and creditor rights and calculate two indices. This indicates that, though the theory does predict something else, LLSV are inclined to distinguish two dimensions of investor protection. And indeed, (GRAFF 2006) finds some support for a two factor solution that is in line with a two-dimensional data set. Looking at loadings of at least |0.5| only, the first principal component is related exclusively to creditor protection indicators and the second component exclusively to shareholder protection indicators. However, while the signs are equal for the high loadings on the first component, we encounter two positive and one negative high loading for the second component, and three out of six shareholder protection indicators as well as one out of four creditor protection indicators do not load highly on their respective components. Moreover, the first two components reproduce no more than 42% of total variance. A standard principal component analysis extracts two additional factors with eigenvalues greater than one, and the rotated loading matrix for these four components does not imply any obvious interpretation. Accordingly, though an imposed two-dimensional structure fits the indicator set somewhat better than a one-dimensional, the presence of wrong signs as well as of indicators that are uncorrelated to either component imply that the indicator set cannot reasonably reduced into one or two dimensions.

Then, however, aggregation of the data is a dubious endeavour, since minor differences in indicator selection, weighting or scaling will considerably change the aggregate measure. We hence should not expect particularly robust results, and this is exactly what is shown in GRAFF (2006 and 2008), where after a few minor but sensible modifications to the way in which LLSV aggregate their indicators into the anti-creditor rights and anti-director rights indices, the relative difference between the group means of civil law and common law countries drops sharply and becomes statistically insignificant.

GRAFF (2006) argues that LLSV's creditor right index disregards information that would produce results less in line with the theory's prediction of the legal family rank order in therms of investor protectiveness. In particular, LLSV (1998, p. 1135) maintain that one of their indicators, the legal reserve capital requirement to avoid dissolution, is merely a "remedial" right, which "protects creditors who have few other powers ..." Now, the group mean of this indicator is 1% for the common law countries, whereas the Scandinavian, German and French

legal legacy counties score 16%, 41% and 21% on average. This creditor rights protection indicator thus scores lowest for the common law countries, which – without the "remedial" interpretation – would contradict the law and finance theory. I think that this interpretation is questionable. It appears very much like an *ad hoc* rationalisation of an unexpected result.[10] When the creditor rights index is recalculated with all five indicators,[11] the alleged superiority of the common law countries in protecting creditor rights is considerably reduced (3.11 versus 1.79 with four indicators compared to 3.17 versus 2.66 with five indicators), and the difference between the groups, which is significant for the original index ($F = 13.0$), turns insignificant ($F = 1.84$, corresponding to $p = 0.18$). Moreover, though the rank order predicted by the law and finance theory does not manifest itself perfectly in the LLSV creditor rights index, a test for linearity is passed at the 1% level ($F = 13.73$). The recalculated index, however, stands in clear contradiction to the law and finance theory, since the common law countries rank inferior to the German law legacy group, and a test for linearity does not even pass at the 10% level ($F = 2.73$). Note also that LLSV (1998: 1138) concede that – even according to their own specification of the creditor rights index – the "United States is actually one of the most anticreditor common-law countries". In other words, the predictions of the law and finance theory do not hold for creditor protection in the German origin country group, which does better than the common law countries, nor for the US, which finds itself close to the bottom.

A similar picture emerges when the LLSV anti-director rights index is analysed in detail (GRAFF 2008). Again, there is an indicator which LLSV call a "remedial" protection and exclude from their index, whereas I argue that a distinction between "remedial" and other protection is not warranted. Another indicator ("one share-one vote") is excluded from the index for unconvincing reasons. Furthermore, the "extraordinary meeting" indicator, which is originally measured on a numerical scale, is dichotomised in a particular way that makes the common law country group appear more protective towards financial investors. A minor modification is to assign one if the requested share to call in an extraordinary meeting is *less* rather than *less or equal* (as in LLSV) than the sample median. I argue that this dichotomisation is preferable, since it splits the sample into groups that are closer to each other in numbers. Finally, I argue that the "proxy by mail" and the "shares not blocked before meeting" variables are practically irrelevant and should be excluded from an index for shareholder protection: They reflect the easiness with which shareholders can cast their votes, but the small public shareholder, who might find it inconvenient not to be able to cast her vote by mail or to be urged to deposit her shares before the meeting is in fact rational to be apathetic. What matters is whether large minority shareholders have a voice, and given that the latter are mostly institutional investors, the provisions captured by the two indicators in question are probably a very minor concern. Now, these modifications to the LLSV anti-director rights index practically eliminate the legal family inter-group differences (1.94 for common law versus 2.11 for civil law as compared to 2.42 versus 4.0 in LLSV's original index, with a drop in the F-statistics from 25 to 0.18, corresponding to $p = 0.67$).

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[10] At any rate, LLSV do not seem too convinced of their interpretation, since they do not include this indicator into their creditor rights index. After all, their interpretation would imply that out of all indicators for creditor protection, this particular one had to be entered with a negative sign.

[11] To make its scale comparable to the other indicators in the creditor rights index, following LLSV's general approach, the reserve requirement indicator is dichotomised before adding it to the index (by assigning one if the reserve requirement is greater than 0% and one zero if there is no such requirement, which splits the sample neatly in 43% countries that score zero versus 57% that score one).

In a related paper, SPAMANN (2006) presents a recoded version of the LLSV anti-creditor rights index for the same countries as in the original sample, but based on detailed information from local lawyers. He finds that after his recoding, the common law countries do no longer score higher on the anti-creditor rights index than the civil law countries. Spamann's finding that after some re-examination the ranking is less close to the predictions of the theory than at first sight is comparable to that in GRAFF (2008). Yet, he arrives at his finding via a different path: instead of performing some modifications to the dichotomisation and aggregation of the original LLSV indicators, Spamann is reassessing the indicators while maintaining the LLSV dichotomisation and aggregation. His result thus addresses the validity of the indicators, while mine takes the indicators at face value and criticises the subsequent steps.

Taken together, these findings cast serious doubt on the empirical basis presented in the seminal papers of the theory. The conjecture that legal origin is the key variable determining to which degree financial investors are protected is not reflected by the LLSV data set, which cannot be reduced to one dimension. Furthermore, the prediction that common law countries offer better protection to financial investors than civil law countries is not nearly as clearly supported by the data as claimed by LLSV and subsequent proponents of the theory. Accordingly the LLSV creditor rights and anti-director rights indices – as well as the studies that rely on the original data – should be referred to with caution.

Now, notwithstanding all critique, the LLSV data can be seen as a heuristic exercise to open new and exciting paths for empirical analyses. Rather than a constituting a final result, they are an invitation for improvements and additions. And indeed, after LLSV made their indices available to the academic community, there have been some attempts to proceed in this direction.[12] We now conclude our analyses by turning these contributions.

5 The LLSV indicators: Revisions and extensions

As discussed above, both the anti-director and the creditor rights index are constructed on a series of arbitrary and sometimes dubious decisions which imply that the support that any of them can deliver to the theory is at best very modest. Moreover, the proponents of the theory themselves consider it empirically convincingly supported by cross-country comparisons of the anti-director rights index, whereas they concede shortcomings regarding creditor protection.[13] According to this self-assessment, the theory would first of all require better support from new or more adequate data on creditor protection.

Let us now, for the purpose of this paper, leave the theory's predictions regarding shareholder protection undisputed[14] and take another look at creditor rights. Indeed, the most significant extension of the original LLSV data so far has recently been provided by Simeon Djankov, Carallee McLiesh and Adrei Shleifer (the latter one of the contributors to the seminal LLSV papers) refers to creditor rights. In particular DJANKOV ET AL. (2007) construct

[12] Given the impact of the theory, it is not a surprise that some effort would be devoted to improve the seminal data set and to extend the sample. What surprises is how little work has been done along these lines.

[13] See LLSV (1998, op. cit.) as well as BECK AND LEVINE (2005).

[14] Note that this just defines the focus of the following reflections and does by no means implies that in this respect we take the theory for granted, which would be difficult, having in mind the findings reported in GRAFF (2008) and SPAMANN (2006).

a data set (henceforth DMS) covering 133 countries[15] and four binary indicators, which are described as equivalent to those constituting the LLSV creditor rights index.[16]

Unfortunately, the legal reserve capital requirement to avoid dissolution, which LLSV interpreted as a "remedial" rather than a proper right, is no longer reported in the DMS data set. We hence cannot – as with the LLSV data – construct an amended five-indicator index where we take the presumed remedy at face value and find that with this modification, the level of creditor protection between county groups of different legal origin reflected by the index is considerably less in line than with the four-indicator measure.

To start with, let us have a look whether – or to which degree – the four DMS indicators differ from the LLSV indicators, which they are supposed to mimic. To this end, Table 2 presents non-parametric correlations for those countries that are included in both data sets.

Table 2: LLSV and DMS creditor rights indicators: Spearman's Rho

	LLSV			
	Reorganisation	No automatic stay	Secured first	No management stay
CR1 (restrictions on entering)	0.50* (47)	0.24 (47)	0.02 (48)	**0.48*** (47)
CR2 (no automatic stay	**0.43*** (47)	0.36* (47)	0.21 (48)	0.18 (47)
CR3 (secured creditor paid first	0.06 (47)	0.18 (47)	0.59* (48)	0.13 (47)
CR4 (management does not stay	0.28* (47)	**0.57*** (47)	0.27* (48)	0.40* (47)

As the non-parametric correlation coefficients given in Table 2 reveal, the DMS indicators are not merely an extension of the LLSV data. If this were the case, the correlations

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[15] The cited paper refers to 129 countries. Presently (September 2007), the data set that has kindly been made available on the internet (economics.harvard.edu/faculty/shleifer/Data/dataset_creditpaper_Nov_05.xls) comprises 133 countries. We shall base our assessment on this last vintage.

[16] The description of the data that is supplied together with the data posted on the web is as follows: "an index aggregating creditor rights, following La Porta and others (1998). A score of one is assigned when each of the following rights of secured lenders are defined in laws and regulations: First, there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization. Second, secured creditors are able to seize their collateral after the reorganization petition is approved, i.e. there is no 'automatic stay' or 'asset freeze.' Third, secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as government or workers. Finally, if management does not retain administration of its property pending the resolution of the reorganization." This data set is hence designed to enlarge the coverage of the LLSV creditor rights index and at the same time to preserve its character.

in the diagonal should be equal or close to unity, which they are clearly not. In fact, they are low to moderate (ranging from 0.36 to 0.59), and in four cases (highlighted in bold), the DMS indicators that allegedly represent the same information as the LLSV indicators correlate higher with another of the LLSV indicator than with that they are supposed to represent. This is an irritating finding. We would expect some minor variation between the two data sets, as the reference years are not the same. The LLSV indicators reflect corporate law in the 1990s, whereas the DMS indicators refer to 2003. Yet, one of the core arguments of the law and finance theory is that legal origin has a highly persistent influence on how corporate law protects investors. A time span of roughly ten years should hence not affect the correlation in any substantial way so that we would expect Table 2 to be very similar to an identity matrix.

Accordingly, the DMS indicators have obviously been substantially recoded and consequentially, whatever the LLSV creditor rights index and the DMS creditor rights index are measuring, it is something substantially different.

We shall come back to what the two indices may reflect later. At this stage, let us briefly compare their mean scores across the main legal families, which are given in Table 3.

Table 3: Creditor rights indices (group means) by legal family

Legal origin	LLSV	DMS (LLSV sample)	DMS (full sample)
Civil law	1.79 (29)	1.59 (29)	1.62 (97)
Common law	3.11 (18)	2.72 (18)	2.28 (36)

As table 3 shows, LLSV's original result that the common law countries score higher on the creditor rights index can be reproduced with the DMS data. Despite substantial recoding, the group means are again significantly different, and this result is the same in qualitative terms for both the full DMS sample of 133 countries and the 47 country sample that is covered by the LLSV data. It would of course be interesting to check in how far this result would be watered down if we could include the alleged "remedial" device (the legal reserve capital requirement) into the DMS index, but, alas, this variable is not reported in the DMS data set.

What we can do, however, is to look at the four LLSV/DMS indicators from a heuristic perspective and see whether the data allow identifying groups of variables or observations that are similar in certain respects, though not necessarily along the lines suggested by the theory of law and finance. To this end, we shall now submit these indicator sets to a series of hierarchical cluster analyses, a method that is designed to identify groups of observations that are similar in a number of aspects.

If the theory were correct, a hierarchical cluster analysis should divide the country sample into two top-level clusters corresponding to the two major legal traditions. Such a pattern

would not require that the common-law countries protect financial investors *better* than civil-law countries; just that they treat them *differently*, which means that this method is not affected by the problems that haunt the anti-creditor as well as the creditor rights indices, namely how to aggregate the information that is conveyed be the indicator set.

To assess the similarity or dissimilarity between observations, we refer to the Euclidean distance for binary data, which is defined as the square root of $(b+c)/(a+b+c+d)$, where $b+c$ is the number of discordant cases (0,1; 1,0) and $a+d$ the number of concordant cases (0,0; 1,1) for a pair of observations in contingency tables for all indicators. The clusters are determined by the Ward method, which is minimising the within-groups variance. Starting from the lowest level of aggregation, this algorithm successively considers all possible pairings and joins those observations to clusters or merges those clusters to higher-level clusters that result in the minimal increase in total within-groups variance. The focus of this algorithm is thus on the within-group homogeneity rather than on the dissimilarity between clusters, which is corresponding well with the assumption of the theory of law and finance that a shared legal tradition will result in similar provisions of corporate law to protect investors' rights.

With the clustering algorithm determined accordingly, we perform three cluster analyses referring to, firstly, a 4×47 data matrix representing the LLSV creditor rights indicators that are included into the index, secondly, a 4×47 matrix covering the same countries but referring to the DMS indicators and thirdly, to a 4×133 matrix representing the DMS county sample. We then evaluate the results in terms of the correspondence of the two clusters on top of the hierarchy with the theory's basic legal family distinction.

To this end, we define a variable "common" that equals one if a country is classified as belonging to the common-law tradition, and zero if it belongs to the complementary civil-law group. We then compare its binary correlation with two dummy variables for the first two clusters on top of the hierarchy. The results are shown in Table 4.

Table 4: Binary correlation (φ) of "common" with clusters 1 and 2

	LLSV data	DMS data (LLSV sample)	DMS data (full sample)
Cluster 1	0.59	–0.30	–0.08
Cluster 2	–0.59	0.30	0.08
N	47	47	133

Note that Table 4 represents the fit of an *a priori* from the theory of law and finance to the data, according to which the indicator should produce clustering of the countries into two groups corresponding to the major legal traditions common law and civil law. Interestingly, this distinction is reasonably well reproduced by the clustering that refers to the LLSV indicators. The correlation of common-law membership with cluster 1 is 0.59. Since the clusters and legal groups both dichotomise the sample, this implies that the correlation of the

common-law dummy variable with cluster 2 equals –0.59, and that same correlations with inverted signs would apply for a civil-law dummy variable. Surprisingly, the correspondence of a two-cluster distinction to the basic legal traditions drops to 0.30 for the same countries, when the clusters are determined with the DMS indicators, which – as they are a recent achievement – we would expect to be closer in line with the theory. Last but not least, there is no correspondence at all when we extend the analysis to the DMS 133 country sample.

These are interesting results. The theory's original idea that major differences in how countries protect investors can be detected along a line that is marked by the two major legal traditions is supported more convincingly for the same countries by the LLSV indicators than by the recoded DMS data. Moreover, for the extended country sample, our cluster analysis completely fails to reproduce the theory's legal family distinction. The original data hence clearly beat the update. In other words, while the LLSV data are supportive of the idea that characteristic similarities of corporate law across countries can be attributed to joint legal origins, the DMS data set is not implying such causality.

6 Summary

The "law and finance theory" identifies two dominating legal traditions, a common law tradition inherited from England, and a civil law tradition that is going back to 19th century codifications in France, Germany and Scandinavia. The micro foundation of this approach is the willingness to invest. The innovative contribution of the theory is the way in which it combines these ideas with its peculiar view on legal history. The major conclusion is that the common law system provides the best basis for financial development and economic growth, followed by Scandinavian and German origin civil law and finally French origin civil law. Moreover, as financial development is nowadays widely believed to promote economic growth, the law and finance theory is perceived as an important building block in the ongoing search for the ultimate sources of economic growth and development.

We argued that the theory faces an identification problem. The majority of common law countries have a market-based financial system, whereas the majority of civil law countries have a bank-based financial system. Yet, since the correspondence is far from perfect, the legal family origin might still reveal essential features beyond the market structure paradigm.

Furthermore, we summarised plausible alternative hypotheses to explain the different levels of investor protection, or in more general terms, the quality of the financial system; but concluded that they cannot rule out that the theory refers to a relevant link between the legal tradition and financial development.

The corner stone of the law and finance theory is the proposition that different legal traditions imply different degrees of investor protection. We reported evidence that this is not as firmly reflected by the available data as claimed by the theory. In particular, the original and widely accepted LLSV data set to support this claim does not have a low dimensional structure, so that it is not obvious what meaning one should attach to an aggregation of the data. Moreover, under such circumstances, minor differences in indicator selection, weighting or scaling may considerably change any resulting aggregate measure. It then was demonstrated that a few minor, but sensible modifications in aggregating the original indicator set indeed produce results that are very different from those brought forward in support of the theory and contradictory to the proposed ranking of the legal families in terms

of investor protection. Accordingly, the validity of the LLSV anti-director rights and creditor rights indices for international comparisons of shareholder and creditor rights and the supremacy of the common law legacy in protecting investors is questionable.

A new dataset on creditor protection by Djankov et al. that covers nearly three times as many countries as the LLSV data at first sight appears to deliver fresh support for the theory, at least if we restrict ourselves to comparisons of an LLSV-type creditor rights index across countries. However, the new data set does not comprise the LLSV "remedial" variable that helped us to re-assess the LLSV creditor rights index scores across legal families. We hence cannot say whether the amended index would not also imply markedly less difference in investor protectiveness between countries with different legal traditions, as it was the case for the smaller LLSV country sample. Yet, what we can say is that the larger data set is strikingly less consistent with respect to the theory's fundamental distinction between common law and civil law countries. If we cluster the countries according to their joint similarity of the four indicators, the original LLSV data is split into clusters that largely correspond to the two main legal families, whereas the new data set on creditor protection is not. In other words, while the LLSV data are supportive of the idea that characteristic similarities of corporate law across countries can be attributed to joint legal origins, the latest data set on creditor protection is not implying such causality, so that the theory's essence is getting lost.

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