Institutions, Loss Aversion, and Entrepreneurial Dynamics: A Cross-Country Evidence

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Abstract

We examine how individual perceptions of loss aversion interact with country institutions and shape the entrepreneurial dynamics. We extend the previous corporate governance findings on economic entrenchment and performance by presenting evidence on the risk loss aversion interactions with (1) governmental institutions and (2) labour regulation, and their effects on entrepreneurship. Using longitudinal datasets our study tests four hypotheses about the institutional and individual effects on early stage entrepreneurial activities in 30 countries over the period 2001-2013. Our results challenge the prevailing "risk attitude-free" approach in comparative corporate governance research. We show the important role of loss aversion interaction with institutional reforms. We find that better country institutions have loss aversion-mitigating effect. The effect of country institutions on total entrepreneurial activity TEA increases with the loss aversion, i.e. country institutions have a stronger impact on TEA when loss aversion is high. However, we also find that the impact of labour regulation on TEA decreases with loss aversion. When people are loss averse, stronger labour regulation is associated with less TEA. Our study has important implications for evidence based policy making presenting results about the possible opposite effects of country governance and labor regulation changes on entrepreneurship.

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I. Introduction

In the 1990s and 2000s, policies for corporate governance reform aimed at constraining the power of corporate insiders and the state in many countries. Most studies examine the effects of these institutional changes on "outsiders" (using the parlance of corporate governance literature) like portfolio and foreign investors. However, their effects on "outsiders", such as domestic would-be entrepreneurs, are less examined.[1] In this paper, we study how corporate governance and labour regulation changes affect the entrepreneurial dynamics in different countries.

The dominant mantra of 1990s against "insiders and the state" was solidly backed by a battery of cross-country studies revealing that oligarchic corporate control and economic entrenchment are detrimental factors for economic performance (Morck et al, 2000, 2005; Vogel, 2006). An underlying assumption of this literature was that the real danger from expropriation from insiders and the state has generated expectations which have impeded investment and the potential entrepreneurial initiative. The common policy prescription was for corporate governance reforms aiming at stronger legal protection of outside shareholders, stronger property rights protection, and financial development fostering creative destruction.[2] Key factors for change have been financial and trade openness and globalization in broad terms.[3] Corporate governance and regulation reforms have led to both increasing shareholder protection in listed companies and increasing labour protection. Fig. 1 shows these trends for a sample of 30 countries over the period 1990-2013. Fig. 2 presents another trend of enhancing openness of economies over the same period.

Three methodological difficulties might be outlined at the very outset of our endeavour. First, comparative approaches to studying corporate governance must, by nature, deal with the diversity across countries and over time. In this sense, comparative analysis seeks to address corporate governance in relation to its wider institutional environment with a given labor market, capital market, legal system, political system, and the like (Aguilera and Jackson, 2010). However, the sound empirical research on cross-country basis appears severely limited due to data constraints and the practically nearly impossible task to apply genuine interdisciplinary approach, which has been championed in many studies, to the complex corporate governance phenomenon (see e.g. Aguilera and Jackson, 2010). Thus, we have to use a reduced form of structured models not including (perhaps) key variables due to data limitations. On the positive side, our empirical research

[1] Studies usually implicitly assume the outsiders' common interest. Rajan and Zingales (2003), for example, claim: "Foreign financial firms that enter the domestic market are another powerful constituency for financial development. Since they are not part of the domestic social and political networks, they would prefer transparent arm's length contracts and enforcement procedures to opaque negotiated arrangements. It is not a coincidence that these are the very requirements of would-be domestic entrepreneurs who are also outsiders to the domestic clubs".

[2] See e.g. La Porta et al (2008) on legal investor protection; Mahoney (2011) on property rights; Rajan and Zingales (2003) on financial development.

[3] Studies have also listed external shocks and war among the important factors for institutional change. See for early discussion, for example, Olson (1981).

design is based on comprehensive theoretical framework and selection of the main variables potentially affecting entrepreneurial activities over time.

Second, prominent scholars of corporate governance have pleaded for studying corporate governance dynamics, system transformation and factors for corporate governance change.[4] However, most corporate governance studies use time invariant proxies for corporate governance indicators. The mainstream law and finance literature examines the effects of legal investor protection on various economic outcomes using only time invariant measures (e.g. anti-director index, anti-self-dealing index, La Porta et al, 2008). This has important limitations. For example, Ahlering and Deakin (2007) argue that: "…The indexes measure only the formal law at a particular point in time; they take no account of functional equivalents to legal regulation beyond the law; and they are not weighted so as to take into account variations in the importance of particular legal measures in given jurisdictions, as a comparative institutional perspective suggests they should be…" p. 867). The cultural studies on corporate governance have also applied time invariant indicators.[5] The prevailing static approaches were challenged by recent projects collecting time-series data and examining shareholder protection and labour regulation dynamics.[6] In this paper, we have used various time variant datasets and extend the previous empirical findings by examining how do institutional and finance changes affect the entrepreneurial dynamics.

Third, recent cross-country research shows that the individual risk preferences matter. In developing countries where enterprises often fail to implement the optimal level of investments (Kremer, et al., 2013), firms with risk tolerant owners make more investments and grow faster than those with risk averse managers. Recent studies show that conservative CEOs are more likely to pay dividends compared to risk-seeking CEOs (Caliskan and Doukas, 2015) and partisan CEOs are associated with a higher level of corporate tax sheltering (https://doi.org/10.1016/j.jcorpfin.2016.03.003). However, the literature on country institutions has mostly neglected the effects of risk attitude on economic performance (see e.g. for a survey Beck , 2012). The research trying to bridge the gap between the traditional "risk attitude-free" corporate goverance literature and behavioural finance studies is not common.[7] Perhaps, the reasons for this kind of state of the art are not trivial and it is partly based on a lack of relevant data. For instance, till recently there were no cross-country data available on risk preferences.[8]

In this paper, we use unique data on risk preferences change and examine how individual perceptions of loss aversion interact with country institutions and shape the entrepreneurial dynamics. Using longitudinal datasets our study tests four hypotheses about the institutional and individual effects on early stage

[4] See, for example, Gilson (1996) and Hellwig (2000).
[5] See, for example, Licht (2014).
[6] See, for example, Siems et al (2016).
[7] Among a few exceptions, see e.g. Morck (2008).
[8] The first dataset on risk preferences around the world includes 53 countries. Data collection was carried out between 2006 and 2007. See Rieger (2015).

entrepreneurial activities in 30 countries over the period 2001-2013. Our results challenge the prevailing "risk attitude-free" approach in comparative corporate governance research. We show the important role of loss aversion interaction with institutional reforms.

Briefly, we find that that better country institutions have loss aversion-mitigating effect. The effect of country institutions on total entrepreneurial activity TEA increases with the loss aversion, i.e. country institutions have a stronger impact on TEA when loss aversion is high. However, we also find that the impact of labour regulation on TEA decreases with loss aversion. When people are loss averse, stronger labour regulation is associated with less TEA.

Our study contributes to the literature as follows. To the best of our knowledge, this is the first work that shows how loss aversion and country institutional interaction is associated with entrepreneurial dynamics in cross-country setting. We extend the previous corporate governance findings on economic entrenchment and performance by presenting evidence on the risk loss aversion interactions with (1) governmental institutions and (2) labour regulation, and their effects on entrepreneurship.

We proceed as follows. In the next section, we present the theoretical framework of the study and a more explicit statement of our hypotheses. Section 3 describes data and methodology. Section 4 discusses basic results. Section 5 presents additional tests. The last section outlines the main conclusions.

2. Theoretical Framework

2.1. Corporate Insiders, the State and Would-Be Entrepreneurs

In our theoretical modelling, the basic causal assumptions are that the economic entrenchment (Morck et al, 2005), state capture (Hellman et al, 2000), and the political power of interest groups (Rajan and Zingales, 2003) have detrimental effects on economic performance and entrepreneurship in particular.

First, Morck et al (2000, 2005) show that entrusting the governance of huge slices of a country's corporate sector to a tiny elite can bias capital allocation, retard capital market development, obstruct entry by outsider entrepreneurs, and retard growth. Furthermore, to preserve their privileged positions under the status quo, such elites might invest in political connections to stymie the institutional development of capital markets and to erect a variety of entry barriers. Such an outcome is a suboptimal political economy equilibrium, which authors dub *economic entrenchment*. Following the normative question "what should be done", Morck et al (2005) show that globalization merits special attention here, for the persistence of economic entrenchment requires a degree of economic autarky for several reasons. They argue that economic openness, the freedom of locals to do business with foreigners, ought also to be numbered among private property rights; and economic autarchy is probably a lobbying goal of oligarchs seeking economic entrenchment. At the same time, openness, once installed, probably will make economic entrenchment more difficult to attain for elite.

Second, which is the relationship between corporate insiders and the state? At the end of 1990s, the World Bank launched a project focusing on corruption and the so-called state capture issues in transition

countries. Studies show that corporate insiders with more experience in rent-seeking than in genuine entrepreneurship, as in some transition economies, might tend to favour weak property rights because these let them play to their advantage. Joel S. Hellman, Geraint Jones, and Daniel Kaufmann (2003) call this *state capture*—in the terminology of Morck et al (2005), the acquisition of control over the organs of the state by corporate oligarchs.

Third, Rajan and Zingales (2003) propose an interest group theory of financial development where incumbents oppose financial development because it breeds competition. The theory predicts that incumbents' opposition will be weaker when an economy allows both cross-border trade and capital flows. According to their theory, incumbent interests are least able to coordinate to obstruct or reverse financial development when a country is open to both trade and capital flows. When a country is open to neither, they coordinate to keep finance under heel. The authors claim that *direct measures of the political power of interest groups* and their ability to influence outcomes are controversial at best. They argue that the right measure would capture the ease with which any entrepreneur with a sound project can obtain finance, the confidence with which investors anticipate an adequate return and the financial sector ease to manage risks at low cost. In a perfect financial system, it will be the quality of the underlying assets or ideas that will determine whether finance is forthcoming, and the identity of the owner will be irrelevant.

In our paper, we apply similar approach using a few *indirect* measures of the power of interest groups and economic entrenchment of incumbents like country governance indicators, labour regulation and access to external finance.

Following the literature, we can distinguish a few aspects of corporate governance reform aiming at decreasing the power of corporate insiders, economic dis-entrenchment and empowering outsiders through 1) better protection of property rights and quality of governmental institutions in general, 2) better legal protection of outside shareholders in public companies, 3) stronger financial development, and 4) labour regulation.[9] Interestingly, the place of labour in the corporate insiders' debate has not been clearly settled. Morck et al (2005) discuss that a simplification in their conceptual framework is that outsiders always prefer strong private property rights but this may not be entirely realistic if organized labour prefers job security for members over general economic growth, as Roe (2003) and Högfeldt (2003) argue is the case in social democracies like Sweden. In such countries, Morck et al (2005) conclude that one might think of organized labour as insiders too.[10]

In sum, in our study we treat as a latent variable the power of interest groups and corporate insiders. We assume that globalization factors have induced corporate governance reforms around the world in the

[9] Recent studies show that one of the two fundamental issues of the comparative corporate governance debates is about the role of other "constituencies" of the corporation besides shareholders, of which labour is most central to the debate (see e.g. Gelter, 2016).

[10] In fact, the appeal for reforms for less labour regulation (weaker labour protection) were part of the policy message of the influential World Bank *Doing Business* reports in the 2000s. For critical views on these reports, see e.g. (Michaels, 2009).

1990s aiming at institutional changes empowering outsiders (e.g. outside shareholders, foreign investors, country would-be entrepreneurs). We examine various proxies for these institutional changes (e.g. country governance indicators, labour regulation, credit to private sector) and their association with the entrepreneurial dynamics in 30 countries over the period 2001-2013. We focus on these countries and this time span due to typical for any empirical research data limitations.

2.2.Model Specification

Douglas North (1990) states that "institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction." Oliver Williamson (2000) has elaborated this notion with a model of four levels of analysis consisting of 1) informal institutions, 2) and 3) formal institutions, and 4) economic outcomes. However, Aguilera and Jackson (2010) argue that that comparative studies of corporate governance must go beyond broad typologies of institutions and look in a "contextualized" way at the underlying identities and constellations of actors. Rather than starting with a clean slate of pre-existing actors with assumed or fixed sets of interests, an actor-centered perspective must be concerned with contextualizing actors within a particular setting as a core part of the analysis. These settings help to define actors' identities and interests. In our analysis, an important part of this setting is the amount of loss aversion in any country that interact with institutions, and the dynamics of this interaction.

The decisions to start a new business are risky, i.e. there is uncertainty regarding the future outcomes of these decisions. As such, decisions to start a new business depend on the risk preferences. Risk is perceived in many different ways. In traditional economics and finance, risk is measured as the deviation from the expected outcome, which is the sure outcome. However, experimental studies show that individuals do not perceive risk this way, i.e. they evaluate outcomes with respect to certain benchmarks and experience outcomes below such benchmarks as much worse that similar outcomes above the benchmark. This asymmetric perception of decision outcomes above and below a certain benchmark has been coined by Kahneman and Tversky (1969) as loss aversion. Recent studies show that loss aversion explains risk taking behaviour better than other conventional measures of risk preferences (Bachmann & Hens, 2018).

In environments where property rights are well defined and protected, people focus their entrepreneurial energy on innovative entrepreneurship rather than on predation and other criminal activity (Baumol, 1990). Studies show positive effects of institutions on economic growth and company performance.[11] We might expect that increasing of profits would have mitigating effect on loss aversion. All other things equal, institutional changes leading to higher profits will increase the utility of would-be entrepreneurs and likelihood more people to prefer starting an own business. Opposite will be true for labour regulation reforms aiming at protecting workers and eventually increasing their wages. All other things equal,

[11] For recent studies, see, for example, Gugler et al (2013) on company profit; Peev (2015) on firm growth.

institutional changes leading to higher wages will increase the utility of would-be employees and likelihood more people to prefer being employees.

We present out considerations in a simple formal model. We apply a modified version of Lucas' (1978) occupational choice model. Assume that the ability of individuals to start an own business is distributed uniformly in a country accounting to

$$p \sim U(0,1) \quad (1)$$

where we will identify *p* as the probability of successful exploitation of a given entrepreneurial opportunity.

Suppose that the individuals in the economy are risk-neutral but loss averse prospect theory decision makers[12] facing two alternatives. They can start their own business or stay employed. If they start their own business, they can make a profit $y > 0$ or achieve a payoff of 0. If the individuals use the wage that they could get as an employee $y > w > 0$ as a reference point, their expected utility from starting an own business is:

$$U(E) = p(y - w) + (1 - p)(-w)\beta \quad (2)$$

where $\beta \geq 1$ is the individual's loss aversion. The utility of the prospect theory decision makers from working as an employee and receiving a wage *w* is equal to 0, since the decision makers uses the wage *w* as a reference point, i.e.

$$U(L) = (w - w) = 0 \quad (3)$$

Hence, individuals will be indifferent between both opportunities if

$$p^*(y - w) + (1 - p)(-w)\beta = 0 \quad (4)$$

This is equivalent to

$$p^* = \frac{\beta w}{(\beta - 1)w + y} \quad (5)$$

Hence, the probability p* divides the population in two groups – those who perceive to have a higher utility from starting an own business and those who prefer to work as employees. Higher loss aversion β increases the threshold probability since

$$\frac{\partial p}{\partial \beta} = \frac{w(y-w)}{(w(\beta-1)+y)^2} > 0 \quad (6)$$

[12] Prospect theory decision makers maximize $U(.) = pv^+ + (1 - p)v^-$ where v^+ is the utility from gains and v^- is the utility from losses. The utility from gains, i.e. payoffs above the reference point is $v^+ = (y - w)^\alpha$, where $\alpha \leq 1$ represents the individual risk aversion. The utility from losses is $v^- = \beta(0 - w)^\alpha$, where β represents the individual loss aversion.

so that a higher loss aversion reduces the percentage of individuals who start their own business.[13] The effect can be changed with institutional changes that affect the profits or the wages. Institutions (e.g. better protection of property righst) that increase the profit *y* could reduce the effect of the loss aversion on the threshold probability and increase the entrepreneurial activities since

$$\frac{dp}{d\beta dy} = \frac{w((1+\beta)w-y)}{(w(\beta-1)+y)^3} < 0 \text{ if } y > w(1+\beta) \quad (7)$$

Institutions (e.g. stronger labour regulation) that increase the wage *w* could increase the impact of the loss aversion on the threshold probability since

$$\frac{dp}{d\beta dw} = \frac{y(y-(1+\beta)w)}{(w(\beta-1)+y)^3} > 0 \text{ if } y > w(1+\beta) \quad (8)$$

2.3.Hypotheses

Risk Preferences

In general, preferences can be seen as a cognitive guide on how to evaluate different aspects of the environment. According to the cognitive science, preferences emerge in early stage of human development when the brain received information and sends instructions to the body. Later, variation in the environment provide new information about the attributes of objects and this shapes the attitude for or against them.[14] Following our discussion in the previous subsection, we have:

Hypothesis 1. The higher a country's loss aversion, the lower entrepreneurial activity.

Our proxy for loss aversion is constructed as the ratio of perceived fear of failure and the perceived opportunities. Variable definitions are presented in the Appendix.

Governmental Institutions

Studies show that property rights protection provides greater incentives to start businesses, enter into contracts, make investments and the like.[15] Paul Mahoney (2001) argues that it is not the protection common

[13] Higher profits y decreases the threshold probability since

$$\frac{dp}{dy} = -\frac{\beta w}{(w(\beta-1)+y)^2} < 0$$

so that higher profits increase the percentage of individuals who start their own business.
Higher wages w increases the threshold probability since

$$\frac{dp}{dw} = \frac{\beta w}{(w(\beta-1)+y)^2} > 0$$

so that higher wages decrease the percentage of individuals who start their own business.

[14] See, for example, Holland et al (1989).

[15] See, for example, Besley (1995) and Johnson, McMillan, and Woodruff (2002).

law systems provides to *shareholders* that explains their economic performance but rather the protection they offer to the *citizens* of these countries. By providing stronger protection of property rights, common law systems protect citizens from the arbitrary expropriations of property that could occur in civil law systems.

We might expect that **c**orporate governance reforms influence "outsiders" and would-be entrepreneurs via a few channels. Any improvement in property rights protection mitigates the fear of entrepreneurs from unlawful expropriation from omnipotent corporate insiders and the state. On the other hand, the better enforcement of property rights might lead to more competition, higher entry of entrepreneurs and another type of fear – the fear of failure based on the more intensive market competition. Which kind of fears could prevail would be open empirical question.[16] To the extent that the fear from expropriation is much stronger than the fear from failure in relatively fair market competition based on rule of law, we might expect that the institutional development mitigates the effect of loss aversion on entrepreneurial activities . We dub this *loss aversion-mitigating effect* and suggest the following hypothesis:

Hypothesis 2. The relationship between the quality of governmental institutions and entrepreneurial activity is stronger in economies that are exposed to greater amounts of loss aversion.

We use Worldwide Governance Indicators (WGI) as measures of the country governance.

Legal Investor Protection

While the literature on economic entrenchment has shown the *negative* effects of oligarchic family control on economic growth and country institutions in general, the *law and finance* literature focus on the *primacy* of common law and Anglo-Saxon legal origin and their positive effects on investor protection, financial development, investment, and economic growth (La Porta et al, 1997, 1998). One might implicitly assume that legal origin has indirect effect on entrepreneurship via various channels, for example, venture capital development and financial development in general. We apply investors protection index and its interaction with our loss aversion variable in our econometric modelling as an additional test of the effects of country institutions on entrepreneurship. We use the CBR Shareholder Protection Index as a proxy for the country investor protection.

Labour Regulation

How does labour regulation affect the entrepreneurial dynamics? How does loss aversion interact with labour regulation and determine the entrepreneurial activities?

The *law and finance* literature approach has been also applied to labour regulation (Botero et al. 2004). The authors claim that legal origin influences the predominant regulatory style of a given country, which leads

[16] See also Morck (2005, p. 701) for further discussion on the effects of the stronger private property rights on "outsiders".

in turn to a greater or lesser propensity to adopt protective labour legislation, after taking into account the roles of politics and culture. The intensity of regulation, in turn, has consequences for long-run economic growth and development. Ahlering and Deakin (2007) present a critical view to this approach. They argue that a critical factor was the timing of industrialization in relation to the emergence of legal institutions associated with the modern business enterprise (the employment relationship and the joint stock company). The authors claim that there exist certain underlying complementarities between the mechanisms of labour law and corporate governance. The prevailing form of labour regulation at enterprise level has implications for corporate governance because the degree to which employees have rights of consultation and co-decision-making affects mechanisms of accountability. Thus, following the literature one cannot make *a priori* predictions about the positive or negative effects of stronger labour regulation (protection) on economic performance.

To the extent that the decreasing of the power of corporate insiders via globalisation is connected to higher openness of economies, we might expect that the higher openness and its underlying higher trade risk lead to higher public expenditures for safety net and higher size of government at least in developed countries (Rodrik, 1998). All other things equal, this kind of increasing of labour protection is eventually linked to rising both public expenditures and taxes, thus having a negative effect on entrepreneurial activity via the tax channel.

In countries with a high amount of loss aversion, increasing the level of labour protection might serve as a signal providing incentives for *less* entrepreneurship. More labour protection does not induce people to become capital investors, better quality of the governmental institutions does, as we have seen in our model in the previous sub-section. Thus, the stronger labour protection *increases* that effect of loss aversion on the entrepreneurial activities. People prefer not taking entrepreneurial endeavour due to both high loss aversion and high labour protection. This observation could be seen in our formal model. If labour protection increases the utility from staying in a paid job, then the difference between the expected reward from self-employment and the expected return from staying in a paid job decreases. Given that this difference in the expected rewards is perceived as a compensation for taking entrepreneurial risks, then a reduction in the risk premium should reduce risk taking. We thus have:

Hypothesis 3. The relationship between the country's labour protection and entrepreneurial activity is stronger in economies that are exposed to *smaller* amounts of loss aversion.

We use the CBR Labour Regulation Index as a proxy for the country labour regulation.

Financial Markets

Rajan and Zingales (2003) adopt the Schumpeterian view that a critical role of finance is creative destruction, and this is possible only if there is a constant flow of capital into new firms and out of old firms. According to Rajan and Zingales, higher openness (trade and financial liberalization) lead to higher financial

development (e.g. bank credits, stock market turnover) and better access to external finance for would-be entrepreneurs, more entrepreneurship and a creative destruction process in general. Other studies present similar view. Openness of economy, stronger protection of property rights and financial development lead to decreasing of economic entrenchment and increasing of entry of new entrepreneurs. Thus, both channels are in work: finance (King and Levine, 1993) and property rights protection (Mahoney, 2011).

We apply the same considerations for the interaction between financial development and loss aversion and its effect on entrepreneurship like in our discussion on the interaction between country institutions and loss aversion above. Thus, we expect the loss aversion-mitigating effect of financial development on entrepreneurial dynamics. We have:

Hypothesis 4. The relationship between the country's financial development and entrepreneurial activity is stronger in economies that are exposed to greater amounts of loss aversion.

We use the ratio of domestic credit to private sector as a proxy for the country's financial development.

3. Data and Econometric Modelling

3.1.Data

The measures of entrepreneurship and entrepreneurial dynamics have been collected from the Global Entrepreneurship Monitor (GEM) data. GEM data contains several metrics on various dimensions of entrepreneurial activity, attitudes towards entrepreneurship as well as entrepreneurial aspirations. We use data covering the 2001- 2013. The data contains a measure of total entrepreneurial activity (TEA), which measures the percentage of population (18-64) who are entrepreneurs. TEA consists of two sub-indicators: a nascent entrepreneurship rate and a new business ownership rate. Nascent measure the percentage of 18–64 population who are currently a nascent entrepreneur, i.e., actively involved in setting up a business they will own or co-own; this business has not paid salaries, wages, or any other payments to the owners for more than three months. New business ownership measures the percentage of 18–64 population who are currently an owner-manager of a new business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than three months, but not more than 42 months. TEA is one of the most widely used measures of entrepreneurial activity used in cross-country comparisons. Our data reveals a rich variation across countries in terms of entrepreneurial activities, attitudes and aspirations.

Table 1 presents the average values of economic variables by countries. From this table one can see that, for example, the US has on average twice as high entrepreneurial activity as compared to Sweden. The level of total entrepreneurial activities (TEA) is highest in Chile, China, Argentina, Brazil, and Estonia. Among the OECD, United States has the highest score. The lowest TEA indicators are observed in Japan and Russia.

In addition to measures of entrepreneurial activity, the GEM data also contains information about fear of entrepreneurial failure and the perceived entrepreneurial opportunities. The proxy for loss aversion is constructed as the ratio of perceived fear of failure and the perceived opportunities. Table 1 shows a significant cross-country variation of loss aversion. Japan, for example, displays a high degree of loss aversion where entrepreneurs in the US have less loss aversion.

Table 2 reports the summary statistics of the main variables. The within country variation of TEA is typically significantly lower as compared to the cross country variation, suggesting that cross country variations in institutions are important determinant. Part of this variation can also be attributed to differences driven by variation in level of economic development. The high entrepreneurial activity, for example, in Chile can at least partially be attributed to a lower level of economic development as compared to some of the other countries. For this reason the GEM data usually reports statistics for "efficiency driven" economies, "innovation driven" and "resource driven" ones. Entrepreneurship across these countries also differs with respect to the extent it is opportunity driven vis-à-vis necessity driven. We focus on this issue and make additional tests on it in section 5.

Fig. 3 shows cross-country comparison of labour regulation and investors protection by countries. One might observe a great diversity.We can identify various patterns like countries with a high level of investors protection and a low level of labour protection (e.g. US, UK, Canada, Malaysia) and countries with a high level of both investors and labour protection (e.g. France).

3.2.Econometric Modelling

We estimate the following models

$logTEA_{i,t} = LA_{i,t} + wgi_{i,t} + LA_{i,t} * wgi_{i,t} + Z_{i,t} + I_{year}$	(9)
$logTEA_{i,t} = LA_{i,t} + prot_{i,t} + LA_{i,t} * prot_{i,t} + Z_{i,t} + I_{year}$	(10)
$logTEA_{i,t} = LA_{i,t} + labreg_{i,t} + LA_{i,t} * labreg_{i,t} + Z_{i,t} + I_{year}$	(11)
$logTEA_{i,t} = LA_{i,t} + logcredit_{i,t} + LA_{i,t} * logcredit_{i,t} + Z_{i,t} + I_{year}$	(12)

The dependent variable in all estimations is the logarithmic value of the total entrepreneurial activity (logTEA) in a country *i* for a specific year *t*. The independent variables include a proxy for loss aversion $LA_{i,t}$, institutional variables including a proxy for country's governance $wgi_{i,t}$, a proxy for investors protection $prot_{i,t}$, a proxy for labour regulation $labreg_{i,t}$, a proxy for the development of the credit market $logcredit_{i,t}$, as well as control variables summarized in the matrix $Z_{i,t}$. The proxy for loss aversion is constructed as the ratio of perceived fear of failure and the perceived opportunities. The ratio reflects the kink in the prospect theory's value function, which Kahneman and Tvesky coined as loss aversion. The control variables summarized in the matrix $Z_{i,t}$ include the market capitalization of the country ($logmcap_{i,t}$) in logarithmic

terms and a proxy for the openness of the country ($logopen_{i,t}$), which is the logarithmic value of the sum of import and exports of the country in a specific year. Variable definitions are presented in the Appendix.

We estimate panel regressions with fixed effects. Robust standard errors are obtained after clustering on each country. All estimations include year fixed effects specified as indicator variables (I_{year}). The appropriateness of the fixed effect models as compared to the random effect estimations is tested with the approach presented by Mundlak (1978). Unlike the Hausman test, the Mundlak approach may be used when the errors are heteroskedastic or have intragroup correlation. In other words, the Mundlak approach can be used with estimations obtaining robust standard errors.

In each estimation we include an interaction term of one institutional variable and the loss aversion. We are interested to estimate whether the institutional variables affect the entrepreneurial activities by changing the level of loss aversion.

4. Main Results

Table 3 presents univariate tests of our key explanatory variables and the total entrepreneurial activity (TEA). All variables have a positive impact on TEA. The impact of *wgi* is weakly significant and the impact of labor regulation is not significant. Investors protection has the most significant impact on TEA.

The main results of our econometric estimation are reported in Table 4. The table present the results in a panel setting using country and year fixed effects with robust standard errors reported in parentheses. In all the specifications but labour protection the coefficient on loss aversion is negative and significant at the 95 or 99 percent confidence level.

The basic research strategy in our specifications is to interact with loss aversion (*LA*) various institutional and finance variables like (i) country governance (*wgi*), (ii) investor protection (*prot*), (iii) labour protection (*labreg*), and (iv) domestic credit to private sector (*credit*). Table 4 shows the results. Specification 1 of the table displays the results with loss aversion and country governance, both individually and interacted each other. The adjusted *R*2 rises to 28.38. The coefficient on country governance has now become insignificant. As predicted by Hypothesis 2, the coefficient on the interaction term is positive and statistically significant at the 95 percent confidence level. Specification 2 displays the results when control variables (openness and capital market capitalisation) are added to the regression. The results remain basically the same. Thus, our hypothesis that the effect of the quality of governmental institutions on total entrepreneurial activity is strongest in countries with more loss aversion is corroborated.

The additional test controlling for the effect of legal investor protection shows similar results (specification 3). The estimated coefficient on investor protection is insignificant. The interaction term is positive and significant at the 90 per-cent level. Adding control variables to the basic model has preserved the reported results (specification 4).

Specification 5 of the table displays the results with loss aversion and labour protection. The coefficient on loss aversion turns positive. The coefficient on investor protection turns also positive. However, the coefficient on the interaction term has become negative and statistically significant at the 99 percent confidence level. Specification 2 displays the results when control variables (openness and capital market capitalisation) are added to the regression. The results remain basically the same. Thus, labour regulation has different effect on entrepreneurial activity compared to the institutional variables influencing capital investors examined above. Labour protection has a positive impact on TEA only if loss aversion is small, the impact turns to be negative for higher loss aversion (interaction term is negative). These results are interesting. We present tentative empirical evidence about the special role of labour regulation for entrepreneurial motivation and activity. The coefficient of loss aversion has to be interpreted in the context of the interaction term. The coefficient of loss aversion changes because the coefficient of the interaction term changes as well. The hypothesis that the effect of labor protection on total entrepreneurial activity is strongest in countries with less loss aversion is corroborated. This funding would have important policy implications for corporate governance reform.

Which is the difference of the effects of country governance and labor protection on TEA? In the regression with investor protection, the interaction term is positive, meaning that loss aversion has a negative effect on TEA if the quality of country governance is low. In the regression with labor protection, the interaction term is negative, meaning that labor protection has a negative impact on TEA if loss aversion is high.

Specifications 7 and 8 report the results with financial development proxied by the credit to private sector measure. The estimated coefficient on credit turns negative and is insignificant. The interaction term between the credit variable and loss aversion is positive and significant at the 99 per-cent level. Adding control variables to the basic model has preserved the reported results (specification 8). The results corroborate Hypothesis 4. We can conclude that credit market development matters to the entrepreneurial activity conditional on the role played by loss aversion. Entrepreneurial activity is stronger in economies subject to greater financial development. Once loss aversion is controlled for, the degree of access to external finance does not seem to exert an independent effect on the entrepreneurial activity. Financial development appears to work through its interaction with the country citizens amounts of loss aversion.

In sum, we have tested the impact of institutional variables (*wgi* and *labreg*) as well as finance variables (*logcredit*) on TEA. We examine whether the institutional and finance variables affect TEA. The basic underlying hypothesis in our research is that institutions matter but their effect is conditional on citizens attitudes to risk (e.g. loss aversion). Country governance and credit market development have positive effect on TEA. Labor protection has positive effect on TEA only if people are not loss averse, otherwise its effect is negative (when people are loss averse, increasing labor protection hampers TEA).

5. Additional Tests

The index of institutional quality used above is an average of six different measures. Some World Bank indexes of institutional quality, like "the rule of law," measure an attribute of a country's institutional structure. Others, like "political stability" or "government effectiveness," represent consequences of a country's institutional structure. It is possible that these country characteristics might affect the entrepreneurial activity differently. High corruption and the absence of the rule of law should seriously handicap businesses. We can also expect that rule of law and corruption are stronger related to loss aversion (e.g. in countries with low rule of law and high corruption, one might believe that she is good but she does not act because she knows that the rules of the game are unfair and the risk of expropriation high).

It is worth examining, therefore, whether we get similar results for the individual measures of institutional quality as we obtained for the aggregate measure. Table 5 reports results for TEA when the aggregate index used in Table 4 is replaced sequentially with the six individual World Bank indexes. All six coefficients on the interaction terms of individual indexes with loss aversion are positive and significant. The largest coefficient is on the political stability index, while control for corruption pick up the highest t-values. Nevertheless, the R2s for all six equations are essentially the same. Thus, we cannot conclude that any of the six governance indicators is superior to the other five or to their average.

Following the discussion on Table 2, one might claim that the entrepreneurial activity is driven by both genuine entrepreneurship and necessity motivated entrepreneurship, the latter typical in developing countries. We examine this potential issue by constraining our sample only including developed countries. Table 6 presents results using the OECD countries sample. These results are stronger than in the total sample. When this sample is examined, the improvement in the fit of the regression is sizable (with the adjusted $R2$ rising from 0.32-0.34 to 0.37-.0.42). All the coefficients on the interaction terms of institutional and finance variables with loss aversion are higher in the OECD countries sample than the relevant coefficients in the total sample. In the specification including country governance index, the coefficient on the interaction term between governance and loss aversion is statistically significant at the 99 percent level. These results confirm the expectations that the genuine entrepreneurship is more typical in developed countries and do not invalidate the main findings in the total sample.

Table 7 reports results for TEA when the aggregate index used in Table 6 is replaced sequentially with the six individual World Bank indexes. In the sample of OECD countries, all six coefficients on the interaction terms of individual indexes with loss aversion are again positive but only rule of law, political stability, and government efficiency appear to be significant. Thus, it appears that the rule of law and political stability have an important effect on entrepreneurial activity.

We have also made other additional tests. Table 8 reports the results using specifications with lagged explanatory variables. Our main results remain. One might argue that some countries show extreme values

of loss aversion and this could drive our estimated results. Table 9 presents the results excluding the extreme values of loss aversion. The results remain basically the same.

6. Conclusions

We analyze the impact of institutional and finance variables on the total entrepreneurial activities (TEA) in 30 countries. The main institutional variables that we consider are the institutional characteristics reflected in the index wgi and labour regulation (labreg). The finance variable is the domestic credit to private sector to GDP (credit). We hypothesize that the impact of these variables on TEA depends on the attitudes of the people as reflected in their loss aversion, i.e. the perceived fear relative to the perceived opportunities.

We find that better country institutions (*wgi*) have loss aversion-mitigating effect. The effect of *wgi* on TEA increases with the loss aversion, i.e. wgi has a stronger impact on TEA when loss aversion is high. However, we also find that the impact of labour regulation (*labreg*) on TEA decreases with loss aversion. When people are loss averse, stronger *labreg* is associated with less TEA. Our study has important implications for evidence based policy making presenting results about the possible opposite effects of country governance and labor regulation changes on entrepreneurship.

Appendix

List of variables

logTEA - The logarithmic value of the total entrepreneurial activity (logTEA) ,which measures the percentage of population (18-64) who are entrepreneurs. Source: GEM data.

LA - The proxy for loss aversion is constructed as the ratio of perceived fear of failure and the perceived opportunities. Source: GEM data.

wgi - The average of the six Worldwide Governance Indicators (WGI): voice and accountability, government effectiveness, rule of law, regulatory quality, absence of corruption, and political stability. Source: World Bank.

VC - Voice and accountability – measuring perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

PS - Political stability – measuring perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.

GE - Government effectiveness – measuring perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

RE - Regulatory quality – measuring perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

RL - Rule of law – measuring perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

CC - Control of corruption – measuring perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

prot - Shareholder protection index – an expert assessment on shareholder protection in 30 countries for the period 1990-2013. Source: CBR Extended Shareholder Protection Index. Version of January 2016. Centre for Business Research, University of Cambridge.

labreg – Labour regulation index – an expert assessment on labour regulation in 117 countries for the period 1990-2013. Source: CBR Labour Regulation Index. Version of January 2016. Centre for Business Research, University of Cambridge.

logcredit—log of domestic credit to private sector (in per cent of GDP). Ratio of total outstanding bank credit to private sector at end-of-year, including households and enterprises, to GDP. Source: World Bank

logmcap – log of market capitalization of listed companies on the domestic(s) stock exchanges as a share of GDP. Source: World Bank.

logopen – log of share of trade (export and import) of GDP. Source: World Bank.

References

Aguilera, R. V. and Jackson, G. (2010) "Comparative and International Corporate Governance," Academy of Management Annals, 4 (1): 485- 556.

Ahlering, B., and S. Deakin. 2007. Labour regulation, corporate governance and legal origin: A case of institutional complementarity? Law and Society Review 41: 865-908.

Bachmann, Kremena, Thorsten Hens, and Remo Stoessel. 'Which Measures Predict Risk Taking in a Multi-Stage Controlled Decision Process?' *Financial Services Review* 26 (2018): 339–65.

Beck Thorsten, Legal Institutions and Economic Development, in: Mueller Dennis (ed.), Oxford Handbook of Capitalism, Oxford University Press, 2012.

Baumol William J. Entrepreneurship: Productive, Unproductive, and Destructive, Journal of Political Economy, Vol. 98, No. 5, Part 1 (Oct., 1990), pp. 893-921.

Besley, T. (1995). Property rights and investment incentives: Theory and evidence from Ghana. Journal of Political Economy, 103, 903–937.

Botero, J., S. Djankov, R. La Porta, F. Lopez-de-Silanes, and A. Schleifer. 2004. The regulation of labour. Quarterly Journal of Economics 119: 1340-82.

Caliskan, Deren, and John A. Doukas. 'CEO Risk Preferences and Dividend Policy Decisions'. *Journal of Corporate Finance* 35 (December 2015): 18–42. https://doi.org/10.1016/j.jcorpfin.2015.08.007.

Fogel Kathy, Oligarchic Family Control, Social Economic Outcomes, and the Quality of Government, *Journal of International Business Studies*, Vol. 37, No. 5 (Sep., 2006), pp. 603-622

Francis, Bill B., Iftekhar Hasan, Xian Sun, and Qiang Wu. 'CEO Political Preference and Corporate Tax Sheltering'. *Journal of Corporate Finance* 38 (1 June 2016): 37–53. https://doi.org/10.1016/j.jcorpfin.2016.03.003.

Gelter, Martin. Comparative Corporate Governance: Old and New, in: *Understanding the Company: Corporate Governance and Theory* (Barnali Choudhury & Martin Petrin eds), Cambridge University Press, 2016.

Gilson, Ronald J., Corporate Governance and Economic Efficiency, 74 Wash. U.L.Q. 327, 332-33 (1996).

Gugler Klaus, Dennis Mueller and Evgeni Peev, Determinants of Ultimate Control of Large Firms in Transition Countries: Empirical Evidence, *Journal of Institutional and Theoretical Economics* Volume 169, Number 2, June 2013 , pp. 275-303(29).

Gugler Klaus, Dennis Mueller, Evgeni Peev and Esther Segalla, Institutional Determinants of Domestic and Foreign Subsidiaries' Performance, *International Review of Law and Economics*, 34, 2013, pp. 88-96.

Hellman, Joel S., Geraint Jones, and Daniel Kaufmann. 2003. "Seize the State, Seize the Day: State Capture and Influence in Transition Economies." *Journal of Comparative Economics*, 31(4): 751–73.

Hellwig, Martin, 2000. Corporate Governance and the Financing of Investment for Structural Change, Sonderforschungsbereich 504 Publications, 00-32, University of Mannheim.

Holland, John H., Keith J. Holyoak, Richard E. Nisbett, and Paul R. Thagard. *Induction: Processes of Inference, Learning, and Discovery*. Bradford Books. MIT Press, 1989.

Högfeldt, Peter. 2004. "The History and Politics of Corporate Ownership in Sweden." Stockholm School of Economics Working Paper.

Johnson, S., McMillan, J., & Woodruff, C. (2002). Property rights and finance. American Economic Review, 92, 1335–1356. Kaufmann, D., Kraay, A., & Mastruzzi, M.

Kahneman, Daniel, and Amos Tversky. 'Prospect Theory: An Analysis of Decision under Risk'. *Econometrica* 47, no. 2 (1979): 263–91.

King Robert G and Ross Levine, The Quarterly Journal of Economics, Vol. 108, No. 3. (Aug., 1993), pp. 717-737.

Kremer, Michael, Jean Lee, Jonathan Robinson, and Olga Rostapshova. 'Behavioral Biases and Firm Behavior: Evidence from Kenyan Retail Shops'. *American Economic Review* 103, no. 3 (May 2013): 362–68. https://doi.org/10.1257/aer.103.3.362.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 1997, Legal

determinants of external finance, *Journal of Finance* 52, 1131–1150.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 1998, Law and finance, *Journal of Political Economy* 106, 1113–1155.

Licht, Amir N. Culture and Law in Corporate Governance, European Corporate Governance Institute (ECGI), 2014, Law Working Paper No. 247.

Lucas, R.E. Jr. (1978), "On the Size Distribution of Business Firms," *The Bell Journal of Economics*, 9, 508–523.

Mahoney, P.G. 2001. "The Common Law and Economic Growth: Hayek Might Be Right", *Journal of Legal-Studies* 30(2), 503-25.

Michaels Ralf, Comparative Law by Numbers? Legal Origins Thesis, Doing Business Reports, and the Silence of Traditional Comparative Law, 57 *American Journal of Comparative Law* 765-795 (2009).

Morck Randal, Behavioral Finance in Corporate Governance: Economics and Ethics of the Devil's Advocate**,** *Journal of Management and Governance*, 2008, *Volume 12, Issue 2*, pp. 179-200.

Morck, Randall, David Stangeland and Bernard Yeung, Inherited Wealth, Corporate Control, and Economic Growth The Canadian Disease? ,in: Morck, R. (ed). Concentrated Corporate Ownership, Inherited Wealth, Corporate Control, and Economic , 2000, pp 319-37

Morck Randall, Daniel Wolfenzon, Bernard Yeung, Corporate Governance, Economic Entrenchment, and Growth, 2005, Journal of Economic Literature, vol. 43, no. 3, September, pp. 655-720.

Mundlak, Y. 1978: On the pooling of time series and cross section data. Econometrica 46:69-85.

North, Douglass C., Institutions, Institutional Change, and Economic Performance, 1990.

Olson, Mansur. The Rise and Decline of Nations, Yale University Press, 1982.

Peev Evgeni, Institutions, Economic Liberalization and Firm Growth: Evidence from European Transition Economies, *European Journal of Law and Economics*, Volume 40, Issue 1, 2015, pp. 149-174.

Pattillo, Catherine, and Måns Söderbom. 'Managerial Risk Attitudes and Firm Performance in Ghanaian Manufacturing: An Empirical Analysis Based on Experimental Data'. Centre for the Study of African Economies, University of Oxford, 2000. https://ideas.repec.org/p/csa/wpaper/2000-17.html.

Rajan, Raghuram G. and Luigi Zingales, The great reversals: the politics of financial development in the twentieth century. Journal of Financial Economics 69 (2003) 5–50.

Rieger Marc Oliver, Mei Wang, and Thorsten Hens, Risk preferences around the world, *Management Science*, Vol. 61.2015, 3, p. 637-648.

Rodrik, Dani . Why Do More Open Economies Have Bigger Governments? Journal of Political Economy, 1998, vol. 106, issue 5, 997-1032.

Roe, Mark J. 2003. *Political Determinants of Corporate Governance: Political Context, Corporate Impact*. Oxford and New York: Oxford University Press.

Siems, M (ed) (2016) CBR Extended Shareholder Protection Index. Version of January 2016. Centre for Business Research, University of Cambridge.

Williamson, Oliver E., The New Institutional Economics: Taking Stock, Looking Ahead, 38 Journal of Economic Literature. 595 (2000).

Tables

Table 1: Average values of economic variables

economy	TEA	prot	labreg	wgi	LA	MCAP	credit/gdp	openness
Argentina	14.75	0.47	0.57	-0.21	0.77	15.29	16.33	28.38
Belgium	3.86	0.54	0.60	1.35	1.52	56.26	61.04	134.96
Brazil	13.99	0.51	0.54	0.03	0.78	51.62	42.66	22.31
Canada	9.36	0.65	0.33	1.62	0.66	117.39	121.49	66.65
Chile	16.51	0.35	0.43	1.17	0.61	98.61	71.42	63.41
China	15.52	0.58	0.37	-0.55	0.97	49.37	107.37	43.63
Cyprus	.	0.29	0.47	1.03	.	34.12	192.19	116.88
Czech Republic	7.61	0.44	0.51	0.87	1.39	18.10	38.35	102.90
Estonia	13.69	0.37	0.52	0.99	0.80	.	76.34	140.87
France	4.67	0.72	0.79	1.23	2.09	60.57	86.85	50.19
Germany	4.86	0.50	0.56	1.50	1.70	38.75	97.99	62.07
India	11.14	0.60	0.52	-0.25	0.77	77.11	34.95	33.82
Italy	4.51	0.49	0.67	0.67	1.56	38.96	79.31	46.99
Japan	3.34	0.70	0.41	1.18	5.13	70.77	189.71	23.29
Latvia	9.21	0.40	.	0.61	1.41	.	74.09	95.22
Lithuania	10.13	0.48	.	0.71	1.45	.	49.47	111.34
Malaysia	6.50	0.72	0.35	0.34	1.05	158.94	116.08	181.27
Mexico	11.29	0.34	0.55	-0.11	0.66	29.06	20.91	50.30
Netherlands	6.27	0.35	0.64	1.71	0.74	86.24	114.48	120.81
Pakistan	9.91	0.32	0.53	-1.00	0.74	21.98	23.72	34.16
Poland	8.08	0.46	0.53	0.71	2.08	23.73	.	63.20
Russia	3.99	0.63	0.56	-0.73	2.28	46.75	32.27	55.39
Slovenia	4.75	0.50	0.67	0.99	1.07	21.70	65.56	114.84
South Africa	6.84	0.55	0.46	0.35	1.10	184.29	127.59	51.88
Spain	5.88	0.55	0.64	1.01	1.74	63.82	142.93	50.74
Sweden	4.94	0.50	0.58	1.76	0.62	76.54	110.54	76.23
Switzerland	6.69	0.48	0.41	1.73	0.81	179.91	151.39	96.89
Turkey	8.61	0.47	0.48	-0.11	0.75	25.68	25.69	44.36
United Kingdom	6.42	0.69	0.32	1.48	1.06	116.19	4439.83	52.16
United States	10.85	0.67	0.15	1.32	0.77	110.62	162.33	24.43

Table 2: Summary statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
logTEA	overall	1.942	0.542	0.392	3.192	N = 276
	between		0.461	1.138	2.760	n = 29
	within		0.257	0.942	2.701	T-bar = 9.517
LA	overall	1.342	1.127	0.315	8.341	N = 276
	between		0.885	0.611	5.125	n = 29
	within		0.574	-1.672	4.557	T-bar = 9.517
wgi	overall	0.714	0.769	-1.178	1.909	N = 450
	between		0.776	-0.997	1.758	n = 30
	within		0.093	0.405	1.118	T = 15
prot	overall	0.510	0.176	0.000	0.785	N = 720
	between		0.125	0.287	0.724	n = 30
	within		0.126	-0.068	0.812	T = 24
labreg	overall	0.506	0.136	0.145	0.801	N = 668
	between		0.132	0.145	0.794	n = 28
	within		0.041	0.340	0.642	T-bar = 23.857
logcredit	overall	4.246	0.904	-1.683	11.547	N = 502
	between		0.727	2.755	5.243	n = 29
	within		0.449	-1.116	10.645	T-bar = 17.310
logopen	overall	4.087	0.600	2.621	5.395	N = 700
	between		0.577	3.084	5.191	n = 30
	within		0.202	3.372	4.810	T-bar = 23.333
logmcap	overall	3.981	0.870	0.939	5.771	N = 522
	between		0.746	2.623	5.183	n = 27
	within		0.425	2.193	5.159	T-bar = 19.333

Table 3: Univariate tests

The table reports the estimated coefficients of the main estimation models with country and year fixed effect but without control variables $Z_{i,t}$. Robust standard errors are reported in parentheses. ***, **, and * indicate significance of the estimated coefficients at the 1%-, 5%-, and 10%-level, respectively.

	logTEA	logTEA	logTEA	logTEA
prot	0.891***			
	(0.317)			
labreg		1.557		
		(1.341)		
logcredit			0.0699**	
			(0.0325)	
wgi				0.622*
				(0.305)
Constant	1.585***	1.234*	1.754***	1.301***
	(0.160)	(0.682)	(0.138)	(0.265)
Observations	276	264	262	259
Mundlak p-val	0.0002	0.0184	0.0037	0.0153
adjR2	0.2477	0.2207	0.2089	0.2527

Table 4: Main results

The table reports the estimated coefficients of the main estimation models with country and year fixed effects. Robust standard errors are reported in parentheses. ***, **, and * indicate significance of the estimated coefficients at the 1%-, 5%-, and 10%-level, respectively.

	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA
LA	-0.175**	-0.237**	-0.571**	-0.573**	0.330**	0.332***	-1.005***	-1.125***
	(0.0661)	(0.0866)	(0.247)	(0.263)	(0.156)	(0.114)	(0.251)	(0.349)
wgi	0.253	0.129						
	(0.324)	(0.395)						
c.LA#c.wgi	0.141**	0.195**						
	(0.0630)	(0.0762)						
prot			0.324	0.361				
			(0.479)	(0.515)				
c.LA#c.prot			0.769*	0.794*				
			(0.402)	(0.415)				
labreg					2.042	2.204*		
					(1.237)	(1.118)		
c.LA#c.labreg					-0.705***	-0.683***		
					(0.250)	(0.175)		
logcredit							-0.0557	-0.0504
							(0.0505)	(0.0550)
c.LA#c.logcredit							0.203***	0.228***
							(0.0551)	(0.0740)
logopen		0.425*		0.255		0.463*		0.469**
		(0.224)		(0.226)		(0.229)		(0.221)
logmcap		0.140**		0.121		0.106		0.134
		(0.0662)		(0.0827)		(0.0885)		(0.0872)
Constant	1.705***	-0.421	2.088***	0.570	1.062	-1.288	2.482***	0.0599
	(0.328)	(0.996)	(0.255)	(0.973)	(0.650)	(1.006)	(0.251)	(0.896)
Observations	259	223	276	239	264	239	262	230
Adj. R-squared	0.2838	0.2893	0.2816	0.2887	0.2752	0.2914	0.2936	0.3148
Number of id	29	26	29	26	27	26	28	25
Mundlak p-val	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 5: Governance subindices and TEA

The table reports the estimated coefficients of the model specified in equation (9) using the sub-indices of *wgi* as independent variables instead of the variable *wgi* with country and year fixed effects. Robust standard errors are reported in parentheses. ***, **, and * indicate significance of the estimated coefficients at the 1%-, 5%-, and 10%-level, respectively.

	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA
LA	-0.165**	-0.218***	-0.161***	-0.185**	-0.157***	-0.176**	-0.116*	-0.159	-0.156**	-0.183***	-0.188***	-0.226***
	(0.0622)	(0.0735)	(0.0580)	(0.0787)	(0.0563)	(0.0771)	(0.0667)	(0.105)	(0.0592)	(0.0577)	(0.0624)	(0.0735)
RL	0.161	0.234										
	(0.273)	(0.292)										
c.LA#c.RL	0.118*	0.162**										
	(0.0587)	(0.0621)										
CC			0.172	0.167								
			(0.159)	(0.187)								
c.LA#c.CC			0.0986***	0.115***								
			(0.0329)	(0.0404)								
RQ					0.177	0.0497						
					(0.176)	(0.247)						
c.LA#c.RQ					0.126*	0.143**						
					(0.0623)	(0.0650)						
VA							0.135	0.404				
							(0.377)	(0.441)				
c.LA#c.VA							0.0706**	0.114*				
							(0.0342)	(0.0637)				
PS									-0.367***	-0.370***		
									(0.106)	(0.108)		
c.LA#c.PS									0.171***	0.212***		
									(0.0524)	(0.0463)		
GE											0.123	-0.0651
											(0.199)	(0.208)
c.LA#c.GE											0.123*	0.151**
											(0.0656)	(0.0708)
logopen		0.505**		0.432*		0.422*		0.507*		0.455		0.351
		(0.230)		(0.221)		(0.232)		(0.291)		(0.293)		(0.216)
logmcap		0.135**		0.125*		0.136*		0.156*		0.150		0.130*
		(0.0651)		(0.0647)		(0.0736)		(0.0810)		(0.0918)		(0.0699)
Constant	1.795***	-0.792	1.789***	-0.419	1.758***	-0.339	1.796***	-1.051	2.104***	-0.305	1.791***	0.0835
	(0.265)	(1.050)	(0.198)	(0.927)	(0.194)	(0.939)	(0.332)	(1.373)	(0.137)	(1.333)	(0.242)	(0.863)
Observations	259	223	259	223	259	223	259	223	259	223	259	223
R-squared	0.315	0.340	0.335	0.353	0.315	0.316	0.285	0.308	0.327	0.340	0.326	0.322
Number of id	29	26	29	26	29	26	29	26	29	26	29	26
Mundlak p-val	0.0000	0.0001	0.0000	0.0000	0.0000	0.0002	0.0000	0.0002	0.0000	0.0006	0.0000	0.0001

Table 6: Main results with OECD countries only

The table reports the estimated coefficients of the main estimation models with country and year fixed effects but only for the OECD countries. Robust standard errors are reported in parentheses. ***, **, and * indicate significance of the estimated coefficients at the 1%-, 5%-, and 10%-level, respectively.

	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA
LA	-0.461**	-0.492**	-0.612**	-0.584*	0.397***	0.407***	-1.690***	-1.717***
	(0.176)	(0.227)	(0.287)	(0.301)	(0.0740)	(0.0572)	(0.314)	(0.360)
wgi	0.0220	-0.171						
	(0.571)	(0.618)						
c.LA#c.wgi	0.374***	0.410**						
	(0.131)	(0.163)						
prot			0.275	0.396				
			(0.530)	(0.554)				
c.LA#c.prot			0.853*	0.834*				
			(0.452)	(0.450)				
labreg					4.668***	4.979***		
					(0.996)	(0.999)		
c.LA#c.labreg					-0.770***	-0.762***		
					(0.128)	(0.0962)		
logcredit							-0.137**	-0.133**
							(0.0516)	(0.0537)
c.LA#c.logcredit							0.342***	0.349***
							(0.0657)	(0.0751)
logopen		-0.199		0.0167		0.0480		0.533
		(0.502)		(0.543)		(0.515)		(0.587)
logmcap		0.182		0.202		0.152		0.120
		(0.110)		(0.129)		(0.125)		(0.139)
Constant	1.700**	1.993	2.058***	1.054	-0.415	-1.426	2.808***	0.0917
	(0.713)	(2.368)	(0.285)	(2.373)	(0.497)	(1.834)	(0.276)	(2.234)
Observations	188	162	201	175	192	175	187	166
R-squared	0.407	0.404	0.373	0.377	0.401	0.412	0.416	0.425
Number of id	20	18	20	18	19	18	19	17
Mundlak p-val	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 7: Subindices of wgi with OECD countries only

The table reports the estimated coefficients of the model specified in equation (9) using the sub-indices of *wgi* instead of *wgi* with country and year fixed effects but only for OECD countries. Robust standard errors are reported in parentheses. ***, **, and * indicate significance of the estimated coefficients at the 1%-, 5%-, and 10%-level, respectively.

	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA
LA	-0.461***	-0.419*	-0.219	-0.202	-0.170	-0.122	-0.225	-0.203	-0.251***	-0.232**	-0.311**	-0.323**
	(0.141)	(0.215)	(0.130)	(0.177)	(0.161)	(0.212)	(0.491)	(0.489)	(0.0756)	(0.0809)	(0.117)	(0.137)
RL	0.0450	0.0794										
	(0.429)	(0.483)										
c.LA#c.RL	0.341***	0.320**										
	(0.100)	(0.144)										
CC			0.241	0.230								
			(0.215)	(0.258)								
c.LA#c.CC			0.131*	0.129								
			(0.0687)	(0.0947)								
RQ					0.410*	0.382						
					(0.224)	(0.357)						
c.LA#c.RQ					0.140	0.108						
					(0.0993)	(0.142)						
VA							0.621	0.628				
							(0.688)	(0.768)				
c.LA#c.VA							0.158	0.159				
							(0.388)	(0.384)				
PS									-0.556***	-0.568***		
									(0.0831)	(0.0928)		
c.LA#c.PS									0.275***	0.284***		
									(0.0596)	(0.0663)		
GE											-0.0400	-0.175
											(0.279)	(0.261)
c.LA#c.GE											0.204**	0.223**
											(0.0879)	(0.0918)
logopen		-0.0401		0.0196		0.114		0.272		0.322		-0.227
		(0.434)		(0.485)		(0.507)		(0.513)		(0.638)		(0.450)
logmcap		0.195*		0.181		0.209		0.280*		0.306**		0.208*
		(0.111)		(0.107)		(0.121)		(0.136)		(0.143)		(0.106)
Constant	1.690***	1.006	1.453***	0.637	1.209***	-0.0667	1.033	-1.232	2.165***	-0.406	1.802***	2.064
	(0.547)	(2.285)	(0.347)	(2.420)	(0.351)	(2.559)	(0.872)	(2.863)	(0.162)	(2.778)	(0.412)	(2.017)
Observations	188	162	188	162	188	162	188	162	188	162	188	162
R-squared	0.402	0.396	0.398	0.395	0.376	0.355	0.345	0.348	0.387	0.403	0.373	0.358
Number of id	20	18	20	18	20	18	20	18	20	18	20	18
Mundlak p-val	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0039	0.0051	0.0000	0.0000

Table 8: Main results with lagged institutional variables

The table reports the estimated coefficients of the models using using lagged values for the institutional variables *wgi*, *prot*, *labreg*, and *logcredit* with country and year fixed effects. Robust standard errors are reported in parentheses. ***, **, and * indicate significance of the estimated coefficients at the 1%-, 5%-, and 10%-level, respectively.

	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA
LA	-0.207**	-0.276***	-0.405*	-0.371	0.342**	0.343***	-0.845***	-0.896**
	(0.0873)	(0.0958)	(0.203)	(0.240)	(0.161)	(0.115)	(0.280)	(0.384)
L.wgi	0.142	0.0509						
	(0.291)	(0.261)						
c.LA#cL.wgi	0.172**	0.230***						
	(0.0731)	(0.0751)						
L.prot			0.202	0.179				
			(0.487)	(0.552)				
c.LA#cL.prot			0.536	0.506				
			(0.321)	(0.358)				
L.labreg					1.472	1.813*		
					(0.942)	(0.962)		
c.LA#cL.labreg					-0.737**	-0.711***		
					(0.265)	(0.181)		
L.logcredit							-0.238**	-0.247*
							(0.104)	(0.127)
c.LA#cL.logcredit							0.169**	0.180**
							(0.0621)	(0.0815)
logopen		0.296		0.289		0.449*		0.347
		(0.200)		(0.239)		(0.221)		(0.247)
logmcap		0.108		0.111		0.117		0.132*
		(0.0737)		(0.0865)		(0.0867)		(0.0752)
Constant	2.005***	0.501	2.120***	0.520	1.367***	-1.060	3.170***	1.356
	(0.294)	(1.005)	(0.256)	(1.062)	(0.480)	(0.932)	(0.492)	(1.036)
Observations	254	220	276	239	264	239	252	221
Number of id	29	26	29	26	27	26	28	25
Mundlak p-val	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
adjR2	0.2881	0.2878	0.2649	0.2617	0.2740	0.2900	0.2576	0.2521

Table 9: Main results without outliers in the loss aversion

The table reports the estimated coefficients of the main estimation models with country and year fixed effects excluding extreme values of loss aversion (observations in the highest and lowest 1% of the distribution). Robust standard errors are reported in parentheses. ***, **, and * indicate significance of the estimated coefficients at the 1%-, 5%-, and 10%-level, respectively.

	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA	logTEA
LA	-0.174**	-0.229***	-0.468*	-0.420	0.307	0.323**	-0.962***	-1.056***
	(0.0630)	(0.0764)	(0.257)	(0.267)	(0.198)	(0.145)	(0.262)	(0.341)
wgi	0.200	0.0546						
	(0.326)	(0.387)						
c.LA#c.wgi	0.132*	0.183**						
	(0.0704)	(0.0789)						
prot			0.516	0.624				
			(0.501)	(0.517)				
c.LA#c.prot			0.593	0.545				
			(0.436)	(0.450)				
labreg					1.989	2.120*		
					(1.254)	(1.112)		
c.LA#c.labreg					-0.673**	-0.670***		
					(0.303)	(0.215)		
logcredit							-0.0454	-0.0372
							(0.0548)	(0.0558)
c.LA#c.logcredit							0.192***	0.211***
							(0.0598)	(0.0745)
logopen		0.436*		0.285		0.466*		0.473**
		(0.231)		(0.221)		(0.226)		(0.221)
logmcap		0.169**		0.149*		0.129		0.146*
		(0.0690)		(0.0790)		(0.0816)		(0.0839)
Constant	1.748***	-0.534	1.983***	0.178	1.100	-1.346	2.449***	-0.0583
	(0.335)	(1.047)	(0.248)	(0.887)	(0.671)	(1.029)	(0.258)	(0.873)
Observations	255	219	272	235	260	235	258	226
Number of id	29	26	29	26	27	26	28	25
Mundlak p-val	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
adjR2	0.2740	0.2845	0.2787	0.2896	0.2709	0.2917	0.2852	0.3080

Figures

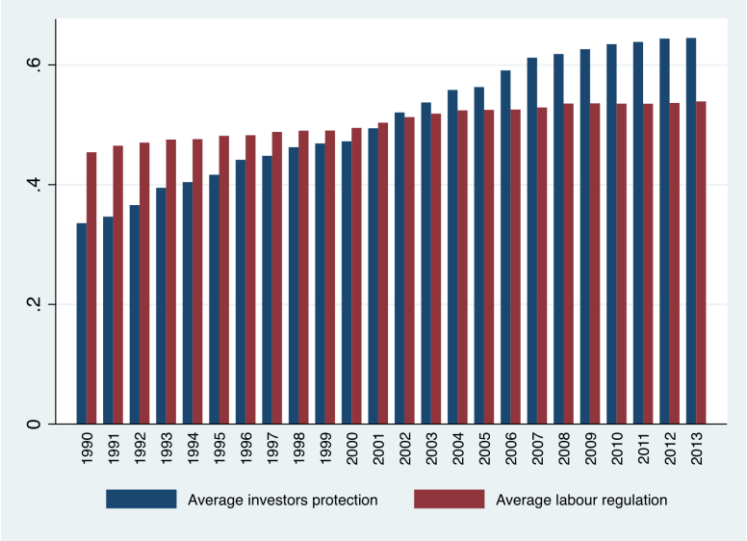

Figure 1: Average investors protection and labor regulation over time

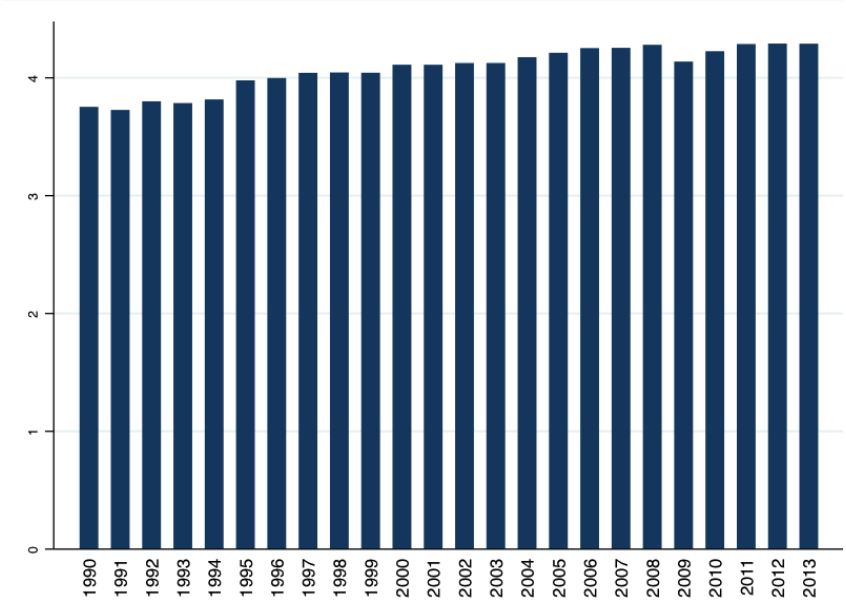

Figure 2: Openness (on a log-scale)

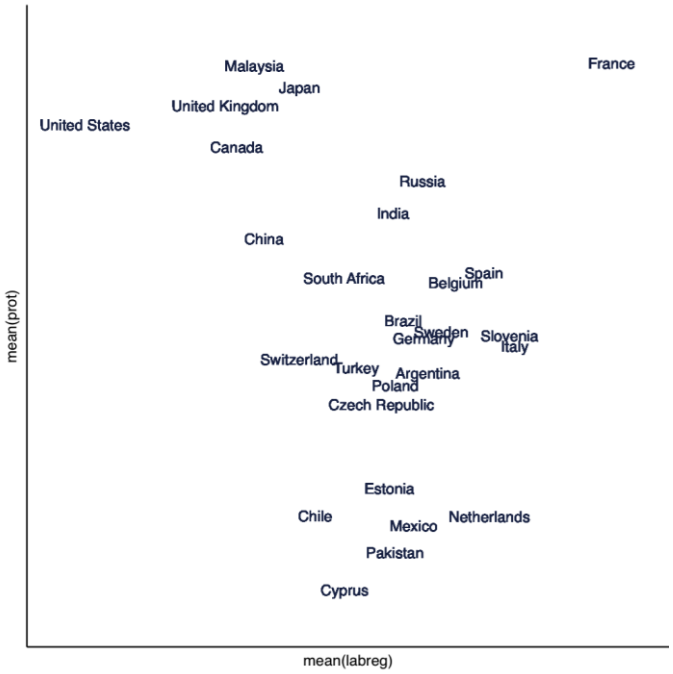

Figure 3: Average level of labor regulation (labreg) versus average level of investors protection (prot) across countries