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NATIONAL LEGISLATIVE SYSTEMS AND FOREIGN STANDARDS AND REGULATIONS: THE CASE OF INTERNATIONAL FINANCIAL REPORTING STANDARDS ADOPTION

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ABSTRACT

This study is focused on the linkages between the legislative families as descriptors of national legislative systems and International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board (IASB). We consider such analysis as a case study for the more general issue of explaining the preferences of national regulators in the adoption of foreign norms, rules, standards and practices. By using a dataset of 162 jurisdictions and dummy variables designed to capture the current stage of IFRSs adoption and, respectively, the taxonomy of their legislative systems, we find that a full IFRSs adoption is more likely to occur in countries which have principles-based on legislative mono-systems. In addition, we observe that a strong rule of law, with an effective mechanism of property rights reinforcement, as well as the pre-adoption existence of a pro-growth set of public policies can contribute to the encouragement of IFRSs adoption.

KEYWORDS

IFRSs adoption· Legislative families

JEL Classification: K49, M48

1. INTRODUCTION

In the context of the existence of transnational regulatory entities and of deepening globalization processes, the national regulators face several problems in the adoption of exogenous norms, rules, standards and practices. The preferences of such bodies for accepting / rejecting or adjusting them vary according to a complex set of institutional behaviour determinants. Among them, the constitutive and functional characteristics of the domestic legislative structures and institutions have an important role. This study is focusing on the possible linkages between the adoption of the International Financial Reporting Standards (IFRSs) and the national legislative taxonomy. There are several advantages in analysing the IFRSs adoption as a case study for foreign standards assimilation mechanisms and influence factors in different autochthonous economic, politic, social and cultural systems. A list of such gnoseological advantages that can be achieved by studying the particular case of IFRSs adoption in order to provide some insights about the acceptance mechanisms for international regulations, standards and practices, far to be exhaustive, can include: the specific approach of IFRSs as principles-based standards; the fact that IFRSs are issued and promoted by transnational entities but reflect some national practices from developed economies; the heterogeneity of individual adoption situations; the eventual conflicts between these international standards and national regulations and practices; the existence of an ongoing process of international accounting harmonization driven by globalization forces etc.

Currently, there is a growing literature studying the possible interrelations between IFRSs adoption and the distinctive features of national legislative institutions and mechanisms. For instance, a study of Hope et al. (2006) finds that those countries which have weaker investor protection mechanisms are more likely to adopt IFRSs. Their evidence also shows that jurisdictions that are perceived to provide better access to their domestic capital markets are more likely to adopt IFRSs. Krivogorsky et al. (2010) provides compelling evidence that jurisdictions and national levels of bureaucratic formalities in business are factors that modify company likelihood to adopt IFRSs early.

Analysing the market reactions to IFRSs adoption in Europe, Armstrong et al. (2008) find that the reaction is less positive for firms resident in code law countries, consistent with investors' concerns over enforcement of IFRSs in those countries. Ball et al. (2000) provide some empirical evidence that code law countries links accounting income directly to current payouts (to employees, managers, shareholders and governments). Consequently, code law accounting income is less timely, particularly in incorporating economic losses. Regulation, taxation and litigation cause variation among common law countries. Also, Ball et al. (2003) consider the cases of Hong Kong, Malaysia, Singapore and Thailand, in all of which accounting implementation was expected to be influenced (positively) by common (rather than civil) law. On the same line of argumentation, Ball (2006) identifies some problems associated with transferring accounting standards from common law to code law, especially with regard to countries that have less respect for protecting shareholders value and minority rights. Burgstahler et al. (2006) document that earning management is more pronounced in countries with weaker legal systems and enforcement. To the same conclusion also comes the study of Leuz et al. (2003) which is concluding that weak outsider protection and private control benefits create incentives to manage earnings. Ramanna and Sletten (2009) using 102 non-EU countries find that countries with "moderate" governance standards have a higher IFRS adoption rate than those with "advanced" governance standards.

This paper seeks to provide two contributions to the existing literature. Firstly, it adopts a more detailed perspective in defining the legislative families based on Faculty of Law, University of Ottawa with the help of the Supreme Court of Canada Library data on "world's legal systems". Secondly, it checks the robustness of our findings by considering other possible explanatory variables as well for the countries' relative preferences in IFRSs adoption for listed companies.

Our arguments can be resumed as follows: 1) the relative preference for professional decisions of legal authorities based on precedent customs and practices versus detailed regulations can be seen as separation criteria between different types of legislative families adopted by individual countries and 2) a major feature of IFRSs consists in the fact that these are a set of principles-based standards. As Institute of Chartered Accountants of Scotland (2006:1) notes: "Principles-based accounting standards are based on a conceptual framework, consist of a clear hierarchy of overriding principles and contain

no 'bright-line' or anti-abusive provisions. Such an approach requires the use of judgment by prepares, auditors and regulators." Such key role of professional judgment facilitates the adoption of IFRSs in a societal environment in which customs shapes actual decisions. Thus, the IFRSs will be easier adopted in countries in which the general legislative framework is more oriented toward the practices-based decisions, being guided only by a simplified set of principles, and less toward detailed written norms, rules and regulations. In order to avoid the costs of *institutional dissonances*, the decisional bodies will tend to adopt that set of standards which is more compatible with the general philosophy of the national regulatory framework. More detailed written rules are, more efforts are required to incorporate exogenous standards based on a different approach. As a consequence, "convergence cannot be achieved if the basis for convergence is a detailed rules-driven approach as this will be difficult to roll out across the different jurisdictions and cultures around the world" (Institute of Chartered Accountants of Scotland, 2006:3). Due to the costs of institutional adjustments, supplementary obstacles for IFRSs adoption can appear if the legislative systems are characterized by a higher degree of complexity with various regulations issued by different channels and subjects of frequent changes.

According to this type of arguments, at least two research hypotheses may emerge:

H1: The preference of regulators from an individual country to adopt IFRSs will increase with the predominance of a principles-based general legislative system and

H2: The preference of regulators from an individual country to adopt IFRSs will decrease as the autochthonous legislative system is more characterized by complex formal rules, norms and regulations which are characterized by high heterogeneity and frequent changes.

2. LEGISLATIVE FAMILIES

The IFRSs adoption is a complex process involving public authorities, professional bodies or joint structures. The preferences of these entities to adopt the standards depend on a complex set of factors, including *inter alia* the general preferences for formal codification of the legislative systems. Thus, the

nature of the regulatory societal framework, being synthesized by the characteristics of the "legislative families" is expected to influence the context, amplitude and effects of IFRSs adoption.

The concept of „legislative families" was introduced within the comparative law at the beginning of the 19th century; 1900 being the year of the first international comparative law congress. Subsequently, different criteria have been suggested in order to perform a typology of the judicial systems, their classification being essentially an academic instrument, but also useful to any person wanting to capitalize it as a comparative argument.

The estimation criteria regarding the affiliation of a jurisdiction to a legislative family or another, have varied along history, starting from those of geographical and religious type (Esmein, 1905) to those which had in view race (Sauser-Hall, 1913), historical origins (Sarfatti, 1933), the contents of the law (Arminjon et al., 1951), and, last but not least, the judicial style (Zweigert and Krotz, 1998). These have proven to be useful instruments that should go through with the diversities of the judicial systems, being materialized in the identification of a number of legislative families in which the judicial systems could be integrated.

Viewing such classifications of the legislative families as being out-of-date, Mattei (1997), starting from the judicial theory and sociology of Max Weber, distinguishes three types of norms that affect mankind behaviour, especially focusing on the origin sources of the legal norms. He divides the law sources in three main groups, these having political, judicial, philosophical or religious tradition. The author is the sympathizer of the idea according to which each judicial system presents various characteristics, but one of them being dominant. The suggested classification distinguishes between rule of professional law, rule of political law and rule of traditional law. Within the structure of the professional law rule is mixed with the common law and Roman-German law, in which the areas of the political and legal decisions are separated. Moreover, law is very secularized. In the rule of political law group, the legislative processes are greatly correlated with the political relations, the group including the law systems from the Former Soviet Union and some Asian systems. Within the integral part of the traditional law rule, the author includes those systems in which the philosophical and religious traditions make common body with the law (for instance, the law of Islamic countries, Hindu law and Asian law).

In a similar manner, Vanderlinden (1995) looks critically upon the old classifications performed in the case of the legislative systems, suggesting a new alignment for them in terms of judicial theories and emphasizing five law systems: common, doctrinarian, jurisprudence, legislative law and the system of revelation.

Common law refers to those judicial systems in which customs are determined by certain groups of the society in order to create certain normative beliefs regarding the judicial obligations. The doctrinarian systems incorporate those deriving from other judicial systems, as the Roman-Dutch in South Africa and Sri Lanka, in which old doctrine of foreign origin is continued in a specific shape. The jurisprudence systems are those which have their historical origin in the English judicial thinking, the focus being on the judicial practice. The legislative systems are those in which the written codified law represents the main law source, essentially including the Roman-German systems. The systems of revelation are those which give major importance to divine revelation, on these grounds being determined the general legal framework in a subsidiary manner. Among these systems, we can find the Islamic law, Hindu law but also the Biblical law.

Although the identified judicial systems are somehow similar to one another, being based on similar cultural and operational traditions within the context of certain similar social, economic and political conditions, the approached legislative families did not answer absolutely to the challenges generated by the judicial culture and mentality, within the context of a lack of cooperation with areas such as judicial sociology, history of law or anthropology (Gessner et al, 1996).As a result, one of the most recent steps in the evolution of the legislative family approaches has brought into attention the so-called "third judicial family" and the idea of mixed judicial systems. The term "mixed" must be construed restrictively, so that this category defines the case in which two or more systems apply cumulatively or interactively.

For instance, Palmer (2001) underlined the idea that mixed jurisdictions represent in fact the third major judicial family alongside of common law and Roman-German law. Currently, there are some attempts of creating an approach referring to the "family trees"- Örücü (2004) - the main object being the attempt of demolishing the conventional model of the judicial systems and creating their reconstruction in which the judicial systems should be classified according to their filiations and

constitutive elements. However, there are other attempts of renewing the old tradition of the judicial families as well (Reyntjens, 1991 and Heiss, 2001).

Our view is that the analysis of the various concepts met in literature allows us to conclude that each judicial system tends to acquire special characteristics in accordance with the respective jurisdictions and populations, despite the affiliation to the same judicial family.

Hence, civil law is currently the judicial system met in most of the world countries, its primary source being legislation, the normative judicial acts (especially codifications). These codes are mainly characterized by a high level of generalization which allows judges to construe and analyze the whole practical circumstances, either by applying the law or by completing the gaps through extrapolation.

Within civil law, four distinct groups can be identified: (a) *French civil law*, which is applicable in France, Benelux, Italy, Romania, Spain and former colonies of these countries; (b) *German civil law*, which is applicable in Germany, Austria, Switzerland, former Yugoslavian republics, Greece, Portugal, Turkey, Japan, South Korea; (c) *Scandinavian civil law*, which is practiced in Denmark, Norway, Sweden, Finland and Iceland; (d) *Chinese legislation*, a mixed civil and socialist law, utilized in People's Republic of China.

What differentiates the essential judicial system of common law from other judicial systems is the explicit recognition of the decision ordered by legal courts as a primary source of law; being a system based on induction in which the judicial concepts are the result of a consequent jurisprudence which defines the application areas. Within the context of the express recognition of the judicial precedent as a legal source, the decisions ordered by the higher courts become compulsory for the inferior courts. However, in certain jurisdictions, the state reserves the right of proceeding to the annulment of the judicial decisions and the performance of a codification, taking into consideration that there are multiple conflicting or ambiguous judicial decisions.

Common law is currently practiced in Ireland, major part of United Kingdom (England, Wales and North Ireland), Australia, India (excepting Goa), and Pakistan, South Africa, Canada (excepting Quebec), Hong Kong, United States of America (excepting Louisiana) and many other places. In this context, there could be emphasized significant differences between the positive legislations from United States, Great Britain and Australia, for instance (countries belonging to the common law

judicial family) but not less substantial are the differences between the positive laws from France, Germany and Chile, for instance (countries belonging to the civil law judicial family). Regarded as a complex of traditions and customs which, in time, have become law, common law can develop based on religion, ethnicity or cultural identity. It has sometimes an important significance in the matter of the personal state in a significant number of countries with mixed judicial systems which tend to apply to "common laws" under the shape of the codes. This is specific to a number of African countries but it's also the case of China or India, for instance, but in very different conditions. The Islamic judicial system is an autonomous system of religious nature, explicitly based on religious principles, predominantly on Koran. The main source is the saint book, the Koran, which completes the *Sunna*, a collection of facts and speeches of the Prophet. The religious law is intended to regulate the whole aspects if the society and the lives of its members. One of the distinctive characteristics of the Islamic law is the fact that the rights of the community are above those of the man, the individual rights and freedoms being restricted by moral, religious and divine imperatives. The system is used in countries with Islamic tradition, such as Afghanistan, Pakistan, Saudi Arabia, Syria, Tunisia, United Arab Emirates or Morocco, where moral norms recently tend to be interpreted in a broader sense, in order to adapt them to the contemporary realities.

No doubt, the existence of the mixed judicial families allows the prominence of more law systems which can find applicability simultaneously regarding the same political entity. These include two or more legislative systems interacting in a multicultural and multi-religious society, being sometimes applied complementarily. The judicial systems from various countries in North Africa or Middle East are strongly influenced by the civil law tradition but, in certain fields - especially in those affecting the individual and family rights and the property rights - the structure of this system tends to follow the Islamic tradition.

Taking into account these distinctive features of legislative families, our research hypotheses can be unified in a single main one as:

H: *The preference of regulators from an individual country to adopt IFRSs will increase as the autochthonous legislative system is closer to Common Law and Civil Law mono-systems.*

3. DATA AND METHODOLOGY

In order to test our hypothesis, we have constructed two dummy variables: *IFRSs* dummy and, respectively, *legislative families* dummy for 162 jurisdictions according to current available information. The first dummy is designed to reflect several stages of IFRSs adoption. Thus, it can take the following values: "0"- if IFRSs are not permitted/ not mentioned by the relevant legislation and no de facto compliance can be observed; "1" if IFRSs are permitted for listed companies (individual and consolidated financial statements) but the international standards are not compulsory; "2" - IFRSs required for some listed companies (e.g. large companies, financial institutions and so on); "3"- IFRSs required for all listed companies both for individual and consolidated financial statements. Since the identification of different intermediary situations is sometimes difficult, data are compiled from various sources, mainly Deloitte (2010), PriceWaterhouseCoopers (2010), and Financial Standards Foundation (2010) websites. These are completed by Ernst&Young (2010), ISAR/ UNCTAD (2010), International Monetary Fund (2010) and World Bank (2010b), as well as by documents of regional organizations such as OHADA (2000). In our dataset, for 37% of the included countries IFRSs are not required nor permitted for quoted companies. For 4.9%, IFRSs are permitted while for 10.5% of cases, IFRSs are required for some companies. Only in 47.6% of cases, the international standards are required for all companies.

On the website of the Faculty of Law, University of Ottawa with the help of the Supreme Court of Canada Library on "world's legal systems", the categories of legal systems are divided into: civil law, common law, customary law, Muslim law and mixed law (University of Ottawa, 2010). We find in these categories countries in which two or more legal systems apply concurrently or interactively, as well as those in which systems are rather juxtaposed because they apply to more or less clearly distinct fields. According to this source, "mixed systems" appear in the following categories: mixes of civil law and common law (3.47% of the world population); civil law and customary law (28.54%); civil

law and Muslim law (3.14%); common law and customary law (2.94%); common law and Muslim law (5.25%), civil law, Muslim law and customary law (3.62%); common law, Muslim law and customary law (19.17%); civil law, common law and customary law (0.8%); common law, Muslim law and civil law (0.23%); and of civil law, common law, Muslim law and Jewish law (0.09%). The number of jurisdictions that fall into the "mixed systems with civil law" category is 65 (19.12% of the world's legal systems), "mixed systems with common law" are 53 (15.59 %), "mixed systems with customary law" are 54 (15.88%) and "mixed systems with Muslim law" are 33 (9.70 %). Thus, our dummy variable for *legislative families* can take values from 1 to 27.

The main statistic properties of the data are listed in Table 1. The values of dispersion, the non-normal distribution and the presence of the *fat tails* effects suggest that there is an important degree of data heterogeneity. Thus, it is necessary to employ an estimation method robust to such heterogeneity. We appeal to the *Generalized Linear Models* (GLM) estimation framework. This methodology allows flexible specifications of the model and "for non-normal data without clustering, generalized linear models are an appropriate alternative to linear models" (Tuerlinckx et al. 2006:225).

Details on this methodology are provided in Appendix. The general specification of the model is non-linear of the form:

$$IFRSs_i = \exp\left(\alpha + \beta_1 Legislative_i + \beta_2 X_i\right) + \varepsilon_i$$
$$\varepsilon_i \sim Pois\left(IFRSs_i, \mu_i\right) \qquad (1)$$

Such a specification falls into the GLM framework with a *log link* function and *Poisson* family distribution (see Appendix). *X* represents other explanatory variables included together with the *legislative families'* dummy. The specification can be justified by the complexity of involved associations between the type of legislative families and IFRSs adoption. Indeed, it seems implausible that the effects induced by the legislative institutions and practices can affect the adoption processes in a linear fashion.

4. RESULTS AND ROBUSTNESS CHECK

The scatter diagram from Figure 1 clearly indicates a negative association between IFRSs adoption and legislative families' dummies. Still, a more analytical approach is needed.

[Insert Figure 1 about here]

Column 1 of Table 4 reports the standalone GLM estimation. It appears that the type of legislative families exercises a significant influence of 1% to IFRSs adoption. The negative sign suggests that this influence is more in favour of boosting up the adoption as the legislative structures are closer to simple civil and common law systems.

A first way to check the robustness of these results can consist in taking into account some control variables. We first consider the "rule of law" variable as this is captured in the methodology proposed by Kaufman, Kraay and Mastruzzi (2010) and reported by *Worldwide Governance Indicators* World Bank' project (WGI) (2010c). There are several transmission channels through which the rule of law can support the IFRSs adoption. For instance, we may argue that the investor's demand for fair value information and a company's commitment to transparency increase the likelihood of providing such information by taking into account the requirements of IFRSs. There is some recent empirical evidence to support this thesis (see Muller et al., 2008). One possible argument for such a linkage is that the increase of disclosure levels as a consequence of IFRSs adoption can enforce the corporate reputation (Espinosa Blasco and Trombetta, 2004), improves the market liquidity (Verrecchia, 2001), and lowers company's cost of capital (Healy and Palepu, 2001, Core, 2001) and so it can provide an *informational rent* for owners.

The pre-existence of a sound legal system, with effective mechanisms of reinforcement for property rights and investors protection, can also support higher net inflows of foreign investments. As Hewko (2002:3) notes: "a transparent, modern "Western" legal system is a prerequisite for foreign investors to venture into host states. The logic of this argument derives from neo-institutional theory of the behaviour of economic actors, which maintains that efficient and transparent legal systems reduce transaction costs for economic actors, including foreign investors." Furthermore, the presence of foreign investors will exercise a supplementary pressure on local decisional bodies to adopt IFRSs, since such an adoption benefits them as well as foreign debtors due at least to: a) reducing the information processing cost of foreign investors and b) lowering the effect of other barriers on cross-

border investments such as the geographic distance (Beneish et al., 2010, Yu, 2009). Such channel applies both for direct and equity foreign investments (Brüggemann et al., 2009, DeFond et al., 2009). Besides the rule of law, we also consider the economic growth as a possible key determinant of IFRSs adoption.

For instance, Archambault and Archambault (2009) document that less economically developed countries were also shown to be more likely to allow IFRSs. Ramanna and Sletten (2010) argue that as more jurisdictions with economic ties to a given country adopt IFRSs, benefits perceived from lowering transactions costs to foreign financial-statement users come to outweigh institutional differences.

Our main argument is that in a pro-growth oriented policy framework, the adoption of IFRSs can appear as a "natural" solution considering its various potential benefits. Among others, the adoption: a) can improve the activity of capital markets especially in relation to small companies in insider economies (Schleicher et al., 2010, Daske et al., 2008); b) can contribute to a decrease in companies' cost of capital and an increase in equity valuations (Daske et al., 2008); c) can strength the authorities' responsiveness to risks, prudential oversight of capital, liquidity and risk management (Financial Stability Forum, 2008). All these effects can largely contribute to economic growth and, so, decisional bodies can support the IFRSs adoption as a growth engine. Thus, we are expecting that both rule of law and economic growth to have a positive impact on adoption processes.

The outputs of a covariance analysis between IFRSs and legislative families' dummies and, respectively, World Bank proxy for *rule of law* and real GDP per capita are displayed in Table 2 (*Spearman rank-order* covariance) and Table 3 (*Kendall's tau*). According with these outputs, it can be concluded that as long as the considered transmission channels between the control variables, IFRSs adoption and legislative structures can be sustained theoretically, they are also empirically valid.

[Insert Table 2 about here]

[Insert Table 3 about here]

Thus, column 2 of Table 4 reports our empirical evidences for the existence of a significant positive effect at 1% of better legislative framework and sustainable growth to adoption. Moreover, the

robustness can be checked, for instance, by modifying the estimation procedure. The modifications might refer to: 1) changes in optimization procedure for GLM framework and 2) changes in methodology.

Thus, column 3 of Table 4 presents the results obtained when the optimization procedure shifts from *BHHH* algorithm to the so-called *Quadratic Hill Climbing* algorithm. With the exception of minor modifications in t-statistics, there are no significant changes in the relevance of considered variables with such shift. Column 4 displays the output of *quantile regression* estimation. Originally proposed by Koenker and Bassett (1978), *quantile regression* provides estimates of the linear relationship between regressors and a specified quantile of the dependent variable. One important special case of quantile regression is the *least absolute deviations* (LAD) estimator, which corresponds to fitting the conditional median of the response variable. Such method allows a more complete description of the conditional distribution than conditional mean analysis alone and, since it does not require strong distributional assumptions, it offers a distributional robust method of modelling the relationship between different percentiles of dependent and the explanatory variables. We employ a bootstrap estimation (10000 replications) based on the *Markov Chain Marginal Bootstrap* (MCMB) in the version developed by Kocherginsky et al. (2005). This version alleviates the autocorrelation problems that can appear in the standard version of MCMB by prior transforming the parameter space and after the performance of the MCMB algorithm, transferring the results back to the original space. This methodology substantially improves the significance of the estimated parameters.

In addition, we have tested the capacity of our conceptual framework to predict the extreme cases (full adoption of current IFRSs). Such choice is justified by the fact that in our dataset only 48% of the observed cases represent the last stage of IFRSs adoption, whereas the others count for intermediary stages. Thus, it can be argued that, if our model is sound, it should be able to predict the situations of full IFRSs adoption and to discriminate between such situation and other stages of adoption. In order to perform such test, the IFRSs dummy is transformed in a binary variable according to the next rule:

$$Binary\_IFRSs_i = \begin{cases} 1, \text{ if } IFRSs = 3 \\ 0, otherwise \end{cases} \qquad (2)$$

The binary estimation is reported in column 5 of Table 4. All the variables are remaining significant at 1% after the transformation of the dependent variable. The binary equation also allows an estimation of the model predictor capacity through the so-called *classification table*. The fraction of observations that are correctly predicted is termed *sensitivity*, while the fraction of observations that are correctly predicted is labelled as *specificity*. The content of such classification is displayed in Table 5 with prediction results based upon expected value calculations.

[Insert Table 5 about here]

Such expected values are computed in the left-hand table. For instance, E (*Binary_IFRSs = 0*) is computed as:

$$\sum_i \Pr\left(Binary\_IFRSs_i = 0 \mid x_i, \beta\right) = \sum_i F\left(-x'_i \beta\right) \ (3)$$

Here the cumulative distribution function *F* is for the *extreme value distribution*:

$$\Pr\left(Binary\_IFRSs_i = 1 \mid x_i, \beta\right) = 1 - (1 - \exp(-e^{\left(-x'_i\beta\right)})) = \exp(-e^{\left(-x'_i\beta\right)}) \ (4)$$

In the lower right-hand table, we can compute the expected number of *Binary_IFRSs= 0* and *Binary_IFRSs= 1* observations for a model estimated with only a constant. For this restricted model, E (*Binary_IFRSs= 0*) is computed as *n(1-p)*, where *p* is the sample proportion of *Binary_IFRSs= 1* observations. A classification is labelled as "correct" when the predicted probability is less than or equal to the cut-off (70% in our estimation) and the observed *Binary_IFRSs= 0*, or when the predicted probability is higher than the cut-off and the observed *Binary_IFRSs= 1*. Overall, the estimated model predicts 63.93% of the observations (66% of the observations with dependent = 0 and 61.6% of the observations with dependent = 1) correctly. It appears that the levels of *sensitivity* and, respectively, *specificity* for our model are almost the same, implying that it can discriminate both „extreme" and „regular" cases. The gain in the number of correct predictions obtained by moving from the right table to the left table provides a measure of the predictive ability of our model. Roughly, there is an improvement of 27.69% over the constant probability model with our estimation. The Goodness-of-Fit tests, *Hosmer-Lemeshow* and *Andrews*, compare the expected fitted values to the actual values by group. If these differences are "small enough", the model is fitting the data adequately. The values of these tests, also reported in Table 5, suggest that this is the case with the binary specification.

Finally, the robustness check concerns the analysis of the major outliers (Table 6).

[Insert Table 6 about here]

A special discussion should take into account the US GAAP and the convergence process with IFRSs. Thus, it worth mentioning that through the *Norwalk Agreement* in October 2002, FASB and IASB committed for the first time to eliminate the differences in the accounting treatments stipulated by IASs (International Accounting Standards) and US GAAP (United States General Accepted Accounting Principles). In addition, the two Boards decided to co-ordinate their future activities in order to ensure that, once achieved, compatibility is maintained. Moreover, in February 2006 (and updated in 2008), the Boards released a *Memorandum of Understanding* (MOU) identifying short-term and long-term convergence projects and setting the steps and milestones towards achieving convergence. Recently, as reaction to the pressure exercised by international groups and organizations, IASB and FASB reaffirmed their commitment to convergence by issuing a statement outlining steps for completing the major joint projects by 2011. To this decision contributed in certain extend the standpoint of US SEC in regard to IASB-FASB convergence process, since right from the beginning of the economic and financial crisis, the SEC's decision to drop the reconciliation requirements for foreign registrants that adopt IFRSs in full came as a surprise. Till November 2007, the foreign companies had two choices: either to prepare US GAAP-based financial statements or to fill a reconciliation form of net income and net assets to US GAAP (Form 20-F). Thus, this was the case for more than 1.100 non-US companies of the approximately 15,000 companies registered with SEC. The cost of such reconciliation for European companies was between 1 and 10 million Euros annually depending on their size and field of activity (McCreevy, 2005). However, due to the progress of the convergence process, Securities and Exchange Commission (SEC) dropped these requirements and allowed the use of IFRSs as issued by the IASB; by this, meaning the full set of standards including the carve-out made by the European Union and the continuous amendments to IFRSs. Moreover, in August 2007, SEC launched a public debate on whether or not to allow US domestic issuers to prepare IFRS financial statements for the purpose of complying with its rules and regulations. To show its clear intentions, in November 2008, SEC published for a proposed "IFRS roadmap", which outlined the milestones that, if achieved, might lead to mandatory transition to IFRS starting December 2014;

certain entities are allowed to adopt IFRS in advance. In addition, in February 2010, the SEC published a *Statement in Support of Convergence and Global Accounting Standards* aiming to facilitate the development and execution of a "Work Plan" that would enable SEC to reach a decision regarding the use of IFRSs by US issuers by 2015 /2016.

Besides U.S. case, with the complex issues of US GAAP / IFRSs convergence, there appears to be some outliers in our analytical frame as reported in Table 6. These outliers reflect a variety of particular situations. For instance, there are some countries, like Argentina, Mexico, Moldova, Thailand, for which the local standards are partially aligned with IFRSs or had bed developed based on previous versions of these, but currently they are unlikely to fully meet the needs of users who accustomed to use them (International Monetary Fund, 2010). For others (Belarus, Colombia), there are major differences between national standards and IFRSs and no systematic update of local practices to reflect the changes in IFRSs (IMF, 2010).

The *Organisation pour l'Harmonisation en Afrique du Droit des Affaires* (OHADA) member countries (Benin, Burkina Faso, Cameroon, Central African Republic, Comoros, Congo, Ivory Coast, Gabon, Guinea, Bissau Guinea, Equatorial Guinea, Mali, Niger, Senegal, Chad, Togo, Republic Democratic of Congo - to be) are subjects of a common accounting system developed under the aegis of the Central Bank of Western African States. This system is the traditional reporting methodology in the Francophone world. It provides a chart of accounts that needs to be adhered to in the preparation of the financial statements. The OHADA system incorporates some elements of IFRSs, but it is far to the complete compliance. The OHADA accounting system is applicable to both private and public businesses. Only entities that are subject to public sector accounting rules, such as non-profit entities in the public sector, are excluded from the requirements of adopting the OHADA accounting system. Banks, financial institutions and insurance companies are also excluded and are governed by sector-specific accounting plans (OHADA, 2010).

In 2010, the President of Turkmenistan issued a Decree approving the program for reforming the national accounting and audit system during a meeting of the Turkmenistan Cabinet of Ministers, which was hold on 9th July 2010. The document was issued to facilitate the implementation of the *2011-2030 National Social and Economic Development Program of Turkmenistan* and bring the

national accounting and audit system in compliance with international standards and requirements of market economy. According to the program, national accounting and auditing standards will be developed in compliance with international standards (IFRSs, ISAs) as well as with the specificities of Turkmenistan economic system. In accordance with the Decree, all enterprises, institutions and organizations irrespective of the form of ownership (except for banks) from January 1st, 2013 are to ensure phased transition and from January 1st, 2014 the full transition of the national accounting and audit system to IFRSs; from January 1st, 2011 the banking institutions in the country are to ensure transition to IFRSs, prepare the financial reports for 2011 in compliance with international standards and ensure conducting financial statement audit on a yearly basis in compliance with international standards starting from the financial reports prepared for 2011. The measures to be taken in order to implement the accounting and audit reform program include updating and developing the relevant regulatory framework, training and advanced training specialists and introducing best international practice through cooperation with leading financial institutions of the world.

Accounting standard regulators of the Bank of Cape Verde have recommended the adoption of IFRSs in 2008, but, due to many constraints, IFRSs are still not permitted in Cape Verde (Bank of Cape Verde, 2009).

In the case of China, IFRSs are not required or permitted for listed companies. However, the Chinese Accounting Standards have largely converged, with some differences still persisting (PriceWaterhouseCoopers, 2010, Financial Standards Foundation, 2010). World Bank (2009) commends China on making "impressive progress" in establishing an institutional framework for accounting, auditing and corporate financial reporting. The report reiterates China's commitment to convergence of Chinese Accounting Standards with IFRSs and points out that full convergence is expected to be achieved by 2012. In September 2009, the Ministry of Finance issued an exposure draft on the "Roadmap for Continuing and Full Convergence" of Chinese standards with IFRSs. So far, in November 2010, the Chinese Auditing Standards Board (CASB) completed the revision of Chinese Standards of Audit (CSAs) and achieved full convergence with the clarified International Standards on Auditing (ISAs).

For Russian Federation, PricewaterhouseCoopers (2010) notes that IFRSs are permitted in the preparation of consolidated accounts of the listed companies. Still, it should be noticed that The State Duma of the Russian Federation has passed a Law on Consolidated Financial Statements which had remained untouched since almost the end of 2004. On December 17th, 2004 the State Duma actually allowed the law in the second reading but no attempts to hold the third and final reading of the law were made. The final reading of the draft law finally took place on July 7th, 2010, and Russia's President Dmitry Medvedev recently signed it into law. The law applies to banks, insurance companies and all companies that have securities accepted to trade at domestic exchanges. It requires so that these entities prepare, submit to regulators and publish financial statements in accordance with IFRSs. The Law states that IFRSs statements are to be prepared in addition to statements under *Russian Generally Accepted Accounting Principles* (Russian GAAP) and not instead of these. The requirements formulated in the new Law will come into effect following a formal recognition from the Government and Central Bank. The Law does not present a mechanism or a timeline for such recognition, but it is expected to take place sometime between 2012 and 2015. Thus, we consider that currently IFRSs are not required nor permitted for listed companies.

Furthermore, commercial banks are required to use IFRSs in the preparation of annual standalone financial statements additionally to accounts prepared under Russian GAAP. Publicly available information does not indicate any requirements to use IFRSs for preparation of consolidated accounts for banks. In general, sources published on the subject point out that progress towards harmonization has been slow and Russian accounting standards remain a "summarized" version of the corresponding IFRSs (Financial Standards Foundation, 2010). International Monetary Fund (2010) report attributes the delay in convergence, primarily, to the emphasis on compliance with tax requirements.

Therefore, it can be concluded that for these outliers there can be found several political, institutional and functional explanations for the fail of our model to correctly estimate the current stage of IFRSs adoption. It is interesting to note that these estimation errors are all in the same direction, since the model systematically expects for these countries a more advanced level of IFRSs adoption. However, a part of these countries had already taken different steps towards IFRSs adoption / national standards convergence.

Overall, we view these results as providing some empirical support for our research hypothesis by highlighting the preference of Common Law and Civil Law countries to adopt in full the IFRSs.

4. CONCLUSIONS

We hypothesize that countries which are characterized by principles and practices-based legislative systems are more likely to adopt IFRSs. In order to test such hypothesis, we have constructed, for a dataset of 162 jurisdictions, dummy variables designed to capture the current stage of IFRSs adoption and, respectively, the taxonomy of their legislative systems. We have tested the linkages between such variables inside a GLM framework and obtained robust evidences that the full adoption of IFRSs is more likely to occur for countries with mono-systems of Common Law and Civil Law types. Thus, we conclude that a flexible, homogenous and practices oriented general legislative system can be a prerequisite for a smooth and complete IFRSs adoption. We also find that a strong rule of law, with an effective mechanism of property rights reinforcement, can contribute to a faster IFRSs adoption. Such result does not necessarily contradict other findings in literature, since the IFRSs adoption can be viewed as an expression of the overview concern of decisional bodies to support the quality of contract enforcement, the property rights and the social order and not only as a tool for the compensation of the national legislative framework' deficiencies. Similarly, it appears that the pre-adoption existence of a pro-growth set of public policies can facilitate the IFRSs adoption. Of course, the significance of our analysis depends on the relevance of the considered transmission channels which are far from being completely and consistently described on a conceptual level and perfectly robust empirically tested. However, the provided evidences can contribute to enhance a broader explanatory framework of the conditions in which there is a clear preference of regulatory bodies to adopt international standards.

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DATA APPENDIX

Table A.1. Dependent and explanatory variables

Variable	Description	Source
IFRSs dummy	Dummy taking the next values: - "0" if IFRSs are not permitted / not mentioned; - "1" if IFRSs permitted; - -"2" IFRSs required for some companies; - "3" IFRSs required for all companies.	Coded by authors based on Deloitte (2010), Price WaterhouseCoopers (2010), Ernst&Young (2010), Financial Standards Foundation (2010), World Bank (2010b), International Monetary Fund (2010), ISAR/ UNCTAD (2010), OHADA (2000) data
Legislative families dummy	Captures the typology of the legislative families (for a more detailed description, see Table A.2.)	Coded by authors based on University of Ottawa (2010)
Rule of law	Captures perceptions to 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.	World Bank (2010a)
Real GDP per capita	Real GDP per capita (log) (US dollars at constant prices and exchange rates-2000)	UNCTAD (2010)

Table A.2. Legislative families

Codification	Description
	Simple legal families
1	Civil Law (mono-system)
2	Common Law (mono-system)
3	Muslim Law (mono-system)
4	Customary Law (mono-system)
	Mixed legal families (Hybrids with civil law, common law, Muslim law or customary law in different combinations)
5	Hybrids with Civil Law and Muslim Law
6	Hybrids with Civil Law and Customary Law
7	Hybrids with Civil Law and Common Law
8	Hybrids with Civil Law, Common Law and Customary Law
9	Hybrids with Customary Law and Common Law
10	Hybrids with Customary Law and Civil Law
11	Hybrids with Common Law and Customary Law

12	Hybrids with Common Law and Civil Law
13	Hybrids with Common Law and Muslim Law
14	Hybrids with Muslim Law and Common Law
15	Hybrids with Muslim Law and Civil Law
16	Hybrids with Muslim Law, Civil Law and Customary Law
17	Hybrids with Muslim Law, Common Law and Customary Law
18	Hybrids with Muslim Law, Civil Law, Common Law and Customary Law
19	Hybrids with Civil Law, Muslim Law and Customary Law
20	Hybrids with Civil Law, Customary Law and Muslim Law
21	Hybrids with Common Law, Muslim Law and Customary Law
22	Hybrids with Civil Law, Common Law, Jewish Law and Muslim Law
23	Hybrids with Customary Law and Muslim Law
24	Hybrids with Common Law , Civil Law and Customary Law
25	Hybrids with Muslim Law, Customary Law and Civil Law
26	Hybrids with Civil Law, Common Law and Customary Law
27	Hybrids with Civil Law, Customary Law and Common Law

APPENDIX GENERALIZED LINEAR MODELS

Originally due to Nelder and Wedderburn (1972) and Wedderburn (1974), *Generalized Linear Models* (GLM) (the term and especially the abbreviation should not be confused with the so-called *General Linear Model*) are a rich and flexible framework for the generalization of ordinary *least squares* regression.

Let Y_i , *i=1,2,...N* , independent response variables each of whose conditional mean depends on *k*-vectors of explanatory variables and unknown coefficients β. Y_i may be decomposed into a systematic mean component, μ_i, and a stochastic component, ε_i, such as:

$$Y_i = \mu_i + \varepsilon_i \qquad (a.1.)$$

The standard linear regression models assume that μ_i is a linear predictor formed from the explanatory variables and coefficients $\mu_i = X_i' \beta$, and that ε_i, is normally distributed with a zero mean and a constant variance, $V_i = \sigma^2$.

In contrast, GLM models allow the mean component to depend on a linear predictor through a nonlinear function, and the distribution of the stochastic component to be any member of the linear exponential family.

Such models consist of three components:

1) A *random component*, specifying the conditional distribution of the response variable, Y_i (for the *i*th of *n* independently sampled observations), given the values of the explanatory variables in the model. In Nelder and Wedderburn (1972) original approach, the distribution of Y_i is a member of an exponential family, such as the Gaussian (normal), binomial, Poisson, gamma, or inverse-Gaussian families of distributions. However, further developments have extended GLM to multivariate exponential families (such as the multinomial distribution), to certain non-exponential families (such as the two-parameter negative-binomial distribution);

2) A linear *predictor* or *index* $\eta_i = X'_i\beta + \theta$ with θ being an optional term. The regressors X may include quantitative explanatory variables, transformations of quantitative explanatory variables, polynomial regressors, dummy regressors, interactions, and so on;

3) A *smooth, invertible link function g(.)*, $g(\mu_i) = \eta_i$, relating the mean and the linear predictor. Because this function is invertible, there can also be written as: $\mu_i = g^{-1}(\eta_i)$.

Taken together, all these elements allow the general formulation of the GLM:

$$\mu_i = g^{-1}(\eta_i)$$

$$V_i = \left(\frac{\Phi}{w_i}\right)V_\mu\left(g^{-1}(\eta_i)\right) \qquad (a.2.)$$

Here $V_\mu(\mu)$ is a distribution-specific variance function describing the mean-variance relationship, the *dispersion constant* $\Phi > 0$ is a possibly known scale factor, and $w_i > 0$ is a known prior weight that corrects for unequal scaling between observations.

A straight interpretation of the relations (a.2.) is that in a GLM frame, the properties of the estimators depends only on a mean and variance, where the mean is determined by the link assumption, and the mean-variance relationship is governed by the distributional assumption. Thus, the assumptions on distributions made in this framework can appear to be overly restrictive. This limitation is treated by Wedderburn (1974) who shows that one need only specify a mean and variance specification to define a quasi-likelihood that may be used for coefficient and covariance estimation. It should be noticed that, for variance functions derived from exponential family distributions, the likelihood and quasi-likelihood functions are the same.

A wide range of familiar models may be formulated in the form of a GLM by an appropriate choice of distribution and link function.

In our settings, we are taking into account the characteristics of the fitted data. Firstly, due to the data heterogeneity, we are choosing for distribution the *Poisson distribution* which can be applied to systems with a large number of possible events, each of them being rare. The Poisson distributions are a discrete family with probability function indexed by the rate parameter $\mu > 0$:

$$f(y_i, \mu_i) = \frac{\mu^{y_i}\exp(-\mu_i)}{y_i!}, \textit{for } y_i = 0,1,2\ldots (a.3.)$$

The expectation and variance of a Poisson random variable are both equal to μ. As μ increases, the Poisson distribution grows more symmetric and is eventually well approximated by a normal distribution.

Secondly, we involve a *log* link function- log (μ). Such a choice is motivated by the concern about the ensuring range restrictions on fitted mean. Since Poison distribution requires a positive mean value, the *log* family (as well others like *power* or *Box-Cox* ones) can be seen as more appropriate. In order to estimate the models, we are involving a common technique- the so-called Gauss-Newton / *BHHH* (Berndt, Hall, Hall and Hausman). This method replaces the negative of the Hessian by an approximation formed from the sum of the outer product of the gradient vectors for each observation contribution to the objective function. For least squares and log likelihood functions, this approximation is asymptotically equivalent to the actual *Hessian* when evaluated at the parameter values which maximize the function. At the same time, for robustness check purposes, we also involve in estimation the *Quadratic hill-climbing* technique which is a straightforward variation on *Newton-Raphson* approach. The technique adds a correction matrix (or *ridge factor*) to the Hessian in order to "push" the parameter estimates in the direction of the gradient vector. The correction may provide better performance at locations far from the optimum, and allows for computation of the direction vector in cases where the Hessian is near singular.

Table 1. Summary statistics of legislative families and IFRSs adoption

	Legislative families dummy	IFRSs adoption dummy
Mean	5.45	1.69
Median	2.00	2.00
Maximum	27	3.00
Minimum	1	0.00
Std. Dev.	5.86	1.39
Skewness	1.32	-0.26
Kurtosis	3.87	1.22
Jarque-Bera	52.31	23.43
Cross-section observations	162	162

Table 2. Covariance analysis of IFRSs adoption dummy and explanatory variables - *Spearman rank-order covariances*

	Covariance	Correlation	t-Statistic	Probability
Legislative families dummy	**IFRSs adoption dummy**	-839.82	-0.43	-6.08	0.00
Rule of law	**IFRSs adoption dummy**	979.93	0.49	7.03	0.00
Rule of law	**Legislative families dummy**	-417.69	-0.20	-2.55	0.07
Real GDP per capita	**IFRSs adoption dummy**	849.58	0.42	5.87	0.00
Real GDP per capita	**Legislative families dummy**	-607.15	-0.29	-3.79	0.00
Real GDP per capita	**Rule of law**	1820.79	0.83	18.64	0.00

Notes: Included observations: 162; Dunn-Sidak multiple comparison adjusted probabilities; the test statistics and associated p-values reported are meant to test the hypothesis that a single correlation coefficient is equal to zero; degree of freedom adjusted.

Table 3. Covariance analysis of IFRSs adoption dummy and explanatory variables - *Kendall's tau measures of association*

		tau-b	tau-a	Score (S)	Concordance	Discordance	Probability
Legislative families dummy	**IFRSs adoption dummy**	-0.37	-0.26	-3357.00	1766.00	5123.00	0.00
Rule of law	**IFRSs adoption dummy**	0.37	0.30	3873.00	6027.00	2154.00	0.00
Rule of law	**Legislative families dummy**	-0.14	-0.13	-1636.00	4335.00	5971.00	0.08
Real GDP per capita	**IFRSs adoption dummy**	0.32	0.26	3333.00	5757.00	2424.00	0.00
Real GDP per capita	**Legislative families dummy**	-0.21	-0.18	-2378.00	3964.00	6342.00	0.00
Real GDP per capita	**Rule of law**	0.64	0.64	8355.00	10698.00	2343.00	0.00

Notes: Included observations: 162; Dunn-Sidak multiple comparison adjusted probabilities; the test statistics and associated p-values reported are for testing the hypothesis that a single correlation coefficient is equal to zero; degree of freedom adjusted.

Table 4. IFRSs adoption and legislative framework

	Model 1 (Generalized Linear Model- constant included)	Model 2 (Generalized Linear Model- *BHHH*)	Model 3 (Generalized Linear Model- **Quadratic**)	Model 4 (Quantile Regression)	Model 5 (binary equation-dependent: binary *IFRS*)
Legislative families dummy	-0.09*** (5.27)	-0.05*** (4.22)	-0.05*** (3.68)	-0.07*** (4.34)	-0.07*** (3.68)
Rule of law		0.23*** (2.78)	0.23*** (3.23)	0.54*** (7.22)	0.63*** (4.28)
Real GDP per capita (20 years moving average)		0.08*** (7.08)	0.08*** (7.74)	0.21*** (11.30)	0.09*** (4.15)

Notes: ***, **, and * represent statistical significance at 1%, 5%, and 10% level. Figures in bracket represent the t-statistic; For the Generalized Linear Model estimations: a) *Family*: Poisson; b) Link function: Log; c) Optimization algorithm: *BHHH* (Model 2) and, respectively, *Quadratic Hill Climbing* (Model 3); For Quantile Regression estimation: a) Coefficient covariance: Bootstrap (10000 replications); b) Sparsity estimation: *Siddiqui (mean fitted)* - bandwidth method: *Hall-Sheather* (size parameter: 0.05); c) Random generator: *Knuth*; d) Bootstrap method: *Markov Chain Marginal* (as modified by Kocherginsky et al., 2005); for Binary equation: binary choice- *extreme value* model; Included observations: 162.

Table 5. Expectation-Prediction Evaluation for Binary Specification

	Estimated Equation			Constant Probability		
	Binary_IFRSs dummy=0	Binary_IFRSs dummy=1	Total	Binary_IFRSs dummy=0	Binary_IFRSs dummy=1	Total
E(Binary_IFRSs = 0)	56.15	29.58	85.73	44.60	40.40	85.00
E(Binary_IFRSs = 1)	28.85	47.42	76.27	40.40	36.60	77.00
Total	85.00	77.00	162.00	85.00	77.00	162.00
Correct	56.15	47.42	103.57	44.60	36.60	81.20
% Correct	66.06	61.59	63.93	52.47	47.53	50.12
% Incorrect	33.94	38.41	36.07	47.53	52.47	49.88
Total Gain*	13.59	14.06	13.81			
Percent Gain**	28.59	26.80	27.69			
Hosmer-Lemeshov Statistic	3.05		Prob. Chi-Sq(8)		0.93	
Andrews Statistic	8.04		Prob. Chi-Sq(10)		0.63	

Notes: *Change in "% Correct" from default (constant probability) specification; **Percent of incorrect (default) prediction corrected by equation; For Goodness-of-Fit Evaluation tests: Grouping based upon predicted risk (*randomized ties*).; Success if probability is higher than 70%.

Table 6. Outliers in estimations

Country	IFRSs	Model 1	Model 2	Model 3	Model 4	Binary equation
Argentina	0	3	2	2	2	<3
Belarus	1	3	2	2	2	<3
Cambodia	0	3	2	2	1	<3
Cape Verde	0	3	2	2	2	3
China	0	2	2	2	1	<3
Colombia	0	3	2	2	2	<3
Comoros	0	2	2	2	1	<3
Equatorial Guinea	0	2	2	2	1	<3
Gabon	0	2	2	2	2	<3
Mexico	0	3	2	2	2	<3
Moldova	0	3	2	2	1	<3
Russian Federation	0	3	2	2	2	<3
Thailand	0	3	2	2	2	3
Turkmenistan	0	3	2	2	1	<3
United States	0	2	3	3	3	3

Figure 1: Scatter Plot of IFRSs adoption dummy vs. Legislative families dummy