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Does IFRSs adoption contribute to the protection of minority investors?

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Abstract

The purpose of the present article is to analyse the connection between the protection of minority shareholders and International Financial Reporting Standards' (IFRSs') adoption. Thus, the authors estimate the status of IFRSs' adoption for 109 countries and involve the Protecting Minority Investors' ranking (as a component of Ease of Doing Business Index provided by World Bank). In order to deal with the reverse causality issues, a GMM methodological framework was adopted. The results reveal that the impact of IFRSs' adoption on a country's rank (in respect to the status of minority investors' protection) is reverse U-shaped and statistically significant. These findings are robust, even if we consider different control variables (legal system features, conditions of borrowed financial resources' markets and insolvency resolution procedures) and estimation methodologies. In addition, the authors compare OECD versus non-OECD countries and find that the strongest impact of IFRSs' adoption is in the case of the latter group.

Keywords: *minority shareholders, IFRSs, legal system, insolvency, OECD & non-OECD countries*

JEL Classification: *C10, C13, C14, D01, D22, G39, M49*

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1. Introduction

In the last decades, as the financial markets developed at a faster pace, new institutions emerged in order to ensure the stability of the market and to enable investors to trust the application of comparable global financial reporting standards. As a key group of financial information users, investors prefer to invest when the legal environment guarantees them enough protection (Leuz et al, 2009). Moreover, as Bishara (2011) notes, the existence of corruption, the lack of investors' protection and of minority shareholders' rights can de-motivate potential investors from taking the risk of investing in companies operating on a certain market. Pagano (1993) shows that weak investors' protection discourages financial markets' development and, so, in order to avoid the reduction of financial inflows, protection must be provided by the market. Some authors consider that financial markets' development level is frequently generated by the level of investors' protection and that the financial crisis was just a proof of market regulators and supervisors' "incapacity of adapting to the market reality and to ensure an adequate investors' protection" (Barna & Nachescu, 2014).

Still, no matter how hard regulators try to ensure the same conditions to all market participants, the protection of minority investors is one of the major issues perceived on both gnoseological and empirical levels. Financial markets where minority investors' rights are properly protected are less sensitive to financial constraints, allowing an increase in investments' performance. Stultz (2005:26) argues that "when the state ruler agency problem is significant, controlling shareholders can exploit it to their advantage. For instance, by bribing state rulers, they can get away with expropriation of minority shareholders that would not be possible if the state strictly adhered to its laws and regulations. Further, corporate insiders who earn rents through control of corporations do not have incentives to take steps that would reduce the discretion of state rulers when that discretion helps them protect their rents."

On the other hand, the level of investments in internal governance is associated with the country-level investor protection. La Porta et al. (1997, 1998, 2000) shows that a strong investor protection is the most important factor associated with promoting good corporate governance. Strong investor protection creates an environment that deters managers from opportunistic behaviour, reduces the risk of mismanagement, and increases shareholders' confidence and their willingness to participate on financial markets (DeFond & Hung, 2004).

Houqe et al. (2012) use in their analysis six country-level measures of investor protection: board independence, enforcement of securities laws, protection of minority shareholder rights, enforcement of accounting and auditing standards, judicial independence, and freedom of the press. They conclude that International Financial Reporting Standards' (IFRSs') adoption does not lead to higher earnings quality, except when a country's investor protection regime is well-established. These results are consistent with the findings of Leuz et al. (2003), La Porta et al. (1998, 2000, 2002), and Ball et al. (2003), which conclude that adopting high quality standards is a necessary but not a sufficient condition in acquiring high quality information, and that strong investor protection is a must in promoting earnings quality, even given high quality reporting standards are implemented.

La Porta et al. (1998) argue that country-level strong investor protection improves the rights of outside (minority) investors and reduces agency problems between insiders/controlling shareholders and outsiders/minority shareholders.

Several authors (La Porta et al., 1997, 1998, 2000; Djankov et al., 2003; Beck et al., 2003a, 2003b; Claessens & Laeven, 2003) show that the investment flows and the capacity of companies to find financing increase when shareholders and creditors are better protected by law.

Modigliani & al. (2000) find supporting evidence for the correlation between investor protection and financial markets' development, by using measures of investor protection and corruption, plus a price measure (the premium on voting stock). When the minority rights are not well protected, the companies' capacity to raise equity capital is affected, leading to less funding resources for new risky ventures. The consequences may include low capitalization and a preference for internal equity and bank lending over traded securities.

One key element influencing the availability of credit, especially for small firms, is the severity of the bankruptcy law's treatment of debtors. A forgiving bankruptcy law offers entrepreneurs partial insurance against the consequences of failure (Jackson, 1985; Lee et al., 2007).

Even if the literature has extensively studied the connections between equity rights protection and the development of financial markets, it also documents the impact of creditor rights' protection on financial markets (Bae & Goyal, 2003; Demirguc-Kunt & Maksimovic, 1998). Still, cross-country empirical evidences are highly limited to the use of a general index equal to the number of rights given to creditors. Such an index was developed by La Porta et al. (1998) and it uses 4 dummy variables: restrictive reorganization, mandatory management turnover, no automatic stay on assets, secured creditors priority. By using this general index, the empirical evidences suggest that the aggregate strength of creditor rights has limited effects on financial development (probably due to the very different aspects taken into account).

Moreover, the adopted legal system has a significant impact on the different aspects concerning the corporate governance principles used. There are quite a few studies analyzing the relationship between law and finance. Most attempt to determine the level of protection provided by law to investors, the differences between the legal systems adopted by different countries or to establish the impact of firm-level corporate governance on firm's performance. A country's legal system is significantly related to the quality of accounting information (La Porta et al., 1998; Ball et al., 2000; Hung, 2000; Burgstahler et al., 2007). La Porta et al. (1997, 1998) show that common law systems (like UK or USA systems), promote strong minority investors' protection, while it is weak or almost inexistent in civil law systems. Weak legal protection for minority shareholders creates opportunities for managerial abuses and, so, the level of protection offered by law to investors (through the rule of law) becomes a basic determinant of how corporate governance evolves in that country.

Nonetheless, the existence of legal regulations is not sufficient if these are not respected by market participants (Berkowitz & al., 2003). Institutional characteristics, such as the rule of law and the efficiency of a country's judicial system, affect the quality of accounting information and the functioning of financial markets, in general (Leuz et al., 2003; Morck et al., 2000).

Bhattacharya and Daouk (2002) show that share prices do not fluctuate with the adoption of new protection measures, but significantly vary when the first infringement of those regulations is penalised. Ben Naceur et al. (2007) proves that a legislation that ensures better protection of shareholders' rights decreases agency costs and offers a better supervision of managers' actions.

When discussing the determinants of the differences in economic development among countries, one of the factors taken into account is the legal environment (Beck et al., 2000). The study shows that a low level on investors' protection, measured through the legal stipulations and the level to which these are imposed, is reflected by the small size of the financial markets.

The level of investors' protection, by means of the existing legal regulations, differs according to the origins of the legal system and, thus, economic growth patterns differ from one country to another (La Porta et al., 2000). The database compiled by La Porta et al. (1997, 1998) when considering investor protection, was disputed by different authors (Djankov et al., 2008; Spamann, 2010), who had concerns about the construction of the classic investor protection measures' index, *The Antidirector Right Index* (ADRI) developed by La Porta et al. (1998). It ranges from zero to six and measures the ease with which shareholders exercise their voting rights and other legal rights – such as suing directors and calling special shareholder meetings. Spamann (2010) has shown that there are significant differences between common law and code law countries, with respect to this index. On the other hand, Djankov et al. (2008) developed an anti-self-dealing index, measuring the protection of minority shareholders from expropriation by controlling shareholders, through self-dealing transactions. This index is a better measure for the minority shareholders' protection, in the case of countries in which ownership is very concentrated, as it includes measures of approval, disclosure and public enforcement of self-dealing transactions.

One major problem that investors face and which affects their capacity of taking adequate decisions is

the quality of the financial information available on the market. Penman (2002) considers that financial information quality should be discussed in terms of the usefulness of the information provided for the shareholders' interest but also taking into account the public interest.

In this context, IFRSs have become, during the last two decades, the principal global financial reporting framework, being accepted for the issuers' admittance on the main stock exchanges in the world (Mueller et al., 1997). IFRSs' adoption by several jurisdictions may be seen as a key event in the history of financial reporting and in the convergence of national accounting systems (Larson and Street, 2004; Whittington, 2005), leading to an increase in the understandability and relevance of financial information for users.

Barth et al. (2008) and Bartov et al. (2004) show that by adopting the IASB standards (clearly influenced by common-law countries, like the United States of America and the United Kingdom), the accounting quality has improved. Barth et al. (2008) shows that, after IASs adoption, firms' evidence less earnings management, more timely loss recognition and more value relevance of accounting data than firms that do not adopt. Aharony et al. (2010) investigate the national impact of IFRSs adoption, by comparing the price and return-based value-relevance models to assess how switching from domestic standards affects the informativeness of accounting figures to investors.

However, the adoption of such a global financial reporting framework puts a a lot of pressure on management and auditors, leaving scope to exercise discretion and reducing earnings management activities (Sunder, 1997; Ewert & Wagenhofer, 2005).

Investor protection laws encourage more accurate financial reporting (Leuz et al, 2003) and more arbitrage, both of which should result in stock prices more accurately reflecting fundamental values.

Bushman & Smith (2001) consider that strong protection of investors' rights, at country level, stimulates companies to offer better quality accounting information, and, so, the economy has the premises to grow faster. There were other authors (Bhattacharya et al., 2003; Bushman et al., 2004) that believe that one factor that influences financial transparency is the level of protection ensured by one country to its investors. Therefore, several authors (Ball et al., 2000; Daske et al., 2008; Hung, 2000; La Porta et al., 1998, 2000, 2002) argue that the adoption of higher quality standards in financial reporting becomes a necessary condition for high quality information. Still, they do not consider that such a measure is sufficient for a better country-level investors' protection. Francis et al (2001) observe that, in countries with well set in place laws for investors' protection, the accounting standards become more transparent.

Leuz et al. (2003) show that, since strong protection limits insiders' ability to mask the performance of the company, as the investors' protection increases, the quality of the disclosed financial information increases as well.

In addition, Ding et al. (2007) investigate how a country's legal systems, economic development, financial markets, and ownership concentration influence its accounting standards, and, consequently, the quality of its financial reporting.

Since many countries have legal stipulations that allow firms to either opt out certain provisions in investors' protection laws or to choose to adopt additional ones (Black & Gilson, 1998; Easterbrook & Fischel, 1991; Klapper & Love, 2004), the degree of corporate governance applied by firms in the same country can significantly differ from one company to another. Such legal stipulations allow managers acting in environments characterized by weak corporate governance to compensate the negative perception of investors towards that environment, by incorporating stronger measures of investors' protection and making them known to the capital owners. In this context, Klapper & Love (2004) note that although firm-level efforts do not fully substitute the absence of a good legal infrastructure, it can, to a certain degree, independently improve investors' protection and minority shareholders' rights, contradicting the theory of Shleifer & Wolfenzon (2002) that consider that the absence of an efficient legal system at country level makes it impossible for firms to ensure a positive perception of the environment in the eyes of the investors. Even though such studies (Klapper & Love, 2004; Shleifer & Wolfenzon, 2002) have shed some light over the relation between governance and performance, they

only refer to the US market, without clarifying such connection for developing countries.

Faccio and Lang (2002) find differences regarding the ownership structure, showing that, in common-law countries (with strong regulation), companies are more likely to be widely held, while in code-law countries (with weak regulation) they are usually family controlled. Also, the state holdings are more significant in code-law countries. They point out that in a widely-dispersed share ownership, managers and shareholders' interests may diverge in important ways, raising the problem of asymmetric information. This generates the need for high quality financial reporting and other forms of timely public disclosure.

Wenjie & Wayne (2014) investigate the impact of accounting standards and legal environments on the information content of stock prices. They consider that there is a negative correlation between the adoption of IFRSs or US GAAP and the stock price synchronicity, at the univariate level, correlation that disappears in a multivariate setting, when measures of legal environments such as the level of shareholder protection or legal origin are included. This shows that the simple adoption of a set of accounting standards is not sufficient for increasing financial market efficiency. They prove that the relationship between stock price synchronicity and accounting standards is significantly negative only in countries with a common-law origin, better shareholder protection, and proper legal enforcements in general. Their conclusions are in line with those of other researchers (Burgstahler et al. 2007; Daske et al., 2008; Doidge et al, 2007; and Leuz et al., 2009), agreeing that high-quality accounting standards make stock prices more informative, only in countries with strong legal environments.

Thus, by reviewing the literature we found that, so far the implications of IFRSs' adoption on the protection of minority investors lack empirical and theoretical support. Our study intends to cover this gap, by addressing this reverse connection too.

Consequently, based on the previous arguments we adopt the following research hypotheses:

H1: *The adoption of IFRSs contributes to the protection of minority investors.*

H2: *The best results are achieved for the full adoption of IFRSs, while the mix of these with national GAAPs leads to a less clear effect.*

H3: *A legal system based on common law does not automatically warranty the best protection of minority investors and a mix of common and civil / Muslim laws performs better in respect to the protection of minority rights.*

The paper is structured as follows: in the next section we present data and research methodology; section 3 reports the results and robustness checks. Several conclusions are drawn and some further policy implications are suggested in section 4.

2. International data

The website of IFRS Foundation and International Accounting Standards Board (IASB) posts profiles about the use of IFRSs in individual jurisdictions. These profiles were developed on the basis of very different sources, the most important one being the set of responses provided by standard-setters and other relevant bodies to a survey conducted by IFRS Foundation. The profiles were reviewed by regulators, international audit firms and the respondents to the survey and their comments are reflected in the posted materials.

We decided to use 109 such profiles as provided by IFRS Foundation at http://www.ifrs.org/Use-around-the-world/Pages/Jurisdiction-profiles.aspx, at November 16, 2014 (**Table no. 1**).

We have constructed a dummy variable that takes value 2 for countries in which IFRSs (as adopted by European Union or published by IASB) are fully adopted, value 1 for countries that have partially adopted IFRSs and 0 for those that decided not to adopt IFRSs. The dataset includes a wide spectrum of situations: out of the sample, 21 countries have not adopted IFRSs, 13 are cases of partial adoption and 75 have fully adopted the standards.

Table no. 1. Countries used in the sample and the state of IFRS adoption and protection of minority investors

Country	IFRS adoption	Protecting minority investors	Country	IFRS adoption	Protecting minority investors	Country	IFRS adoption	Protecting minority investors
Singapore	2	3	Israel	2	11	Philippines	1	154
New Zealand	2	1	Chile	2	56	Ukraine	2	109
Hong Kong SAR, China	2	2	Belgium	2	40	Bahamas, The	2	141
Denmark	2	17	South Africa	1	17	Dominica	2	87
Korea, Rep.	2	21	Czech Republic	2	83	Sri Lanka	2	51
Norway	2	12	Armenia	2	49	St. Lucia	2	141
United States	1	25	Rwanda	2	117	Brunei Darussalam	0	110
United Kingdom	2	4	Romania	2	40	Barbados	1	177
Finland	2	76	Saudi Arabia	0	62	El Salvador	2	154
Australia	2	71	Slovenia	2	14	Zambia	2	83
Sweden	2	32	Panama	2	76	Egypt, Arab Rep.	0	135
Iceland	2	28	Hungary	2	110	Indonesia	0	43
Ireland	2	6	Turkey	2	13	Ecuador	2	117
Germany	2	51	Italy	2	21	Jordan	2	154
Georgia	2	43	Belarus	0	94	Belize	0	169
Canada	2	7	Jamaica	2	71	Nicaragua	1	172
Estonia	2	56	Luxembourg	2	117	Brazil	2	35
Malaysia	2	5	Greece	2	62	St. Kitts and Nevis	2	87
Switzerland	1	78	Russian Federation	2	100	Guyana	2	135
Austria	2	32	Moldova	2	56	Argentina	2	62
United Arab Emirates	1	43	Cyprus	2	14	Pakistan	1	21
Latvia	2	49	Croatia	2	62	Tanzania	2	141
Lithuania	2	78	Oman	2	122	Kenya	2	122
Portugal	2	51	Albania	0	7	Sierra Leone	2	62
Thailand	0	25	Ghana	2	56	Uzbekistan	0	100
Netherlands	2	94	Mongolia	2	17	India	0	7
Mauritius	1	28	Guatemala	1	174	Bolivia	0	160
Japan	0	35	Vietnam	0	117	Madagascar	0	87
Macedonia, FYR	2	21	Trinidad and Tobago	2	62	Niger	0	146
France	2	17	Azerbaijan	2	51	Nigeria	0	62
Poland	2	35	Fiji	2	110	Zimbabwe	2	87
Spain	2	30	Uruguay	1	110	Bangladesh	2	43
Colombia	0	10	Costa Rica	2	181	Guinea-Bissau	0	122
Peru	2	40	Dominican Republic	0	83	Angola	0	94
Slovak Republic	2	100	Antigua and Barbuda	2	35	Venezuela, RB	1	178
Bulgaria	2	14	Paraguay	0	166			
Mexico	1	62	Malta	2	51			

Source: Data processed by the authors

In addition, we use data provided by Doing Business (www.doingbusiness.org). This database provides information regarding the protection of minority investors. The data come from a questionnaire administered to corporate and securities lawyers and are based on securities regulations, company laws,

civil procedure codes and court rules of evidence. The ranking is according to the distance to frontier scores for protecting minority investors.

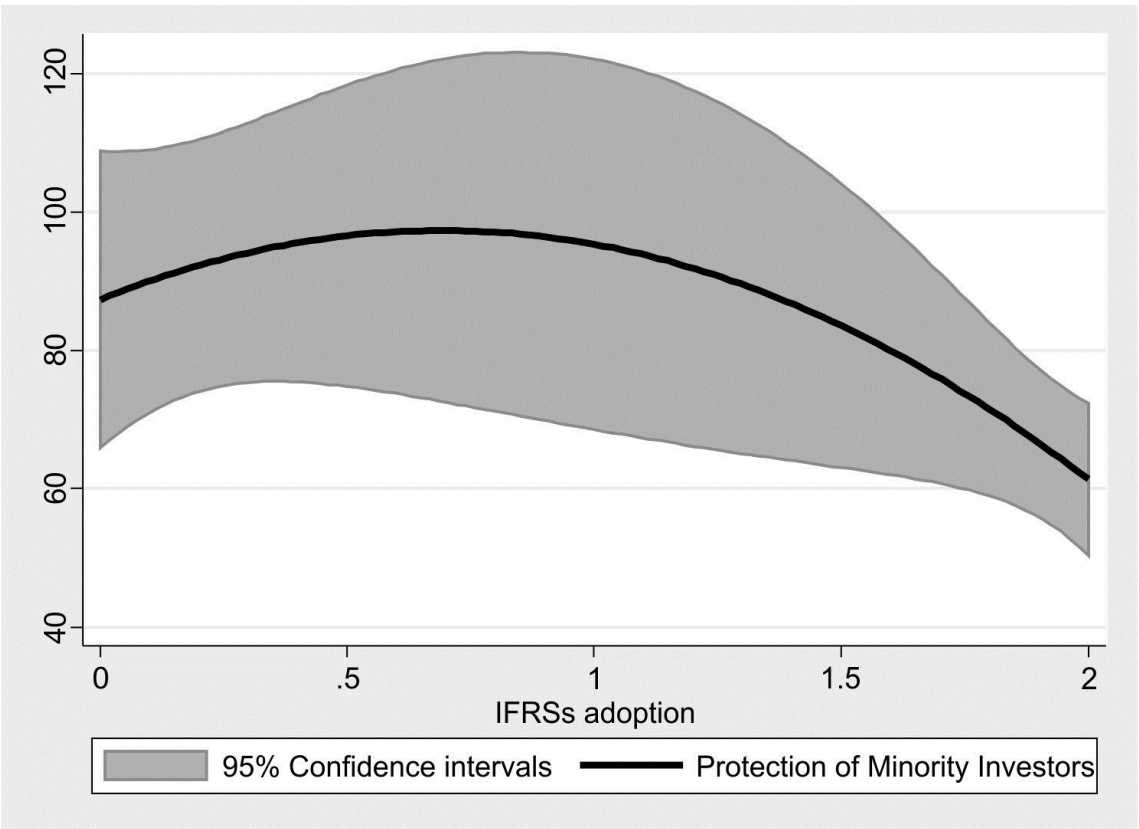
With the IFRSs adoption dummy as the main explanatory variable, we control for ease of getting credit and for resolving insolvency mechanisms. Doing Business measures the legal rights of the borrowers with respect to secured transactions, through one set of indicators, and the sharing of credit information, through another.

The ranking of economies on the ease of getting credit is determined by sorting their distance to frontier scores for getting credit. These scores are the distance to frontier score for the sum of the strength of legal rights index and the depth of credit information index.

The ranking of economies on the ease of resolving insolvency is determined by sorting their distance to frontier scores for resolving insolvency. These scores are the simple average of the distance to frontier scores for the recovery rate and the strength of insolvency framework index.

We also control for the specific features of the legal system. Data for each country are provided by University of Ottawa, JuriGlobe-World Legal Systems (http://www.juriglobe.ca/ eng/syst-onu/index-alpha.php). The dummy variable takes value 2 for countries with a common law system, 1 for countries with mixed systems and 0 for those having a civil law system.

Figure no. 1. Kernel (Epanechnikov) fit for protection of minority investors and IFRSs' adoption



Source: Data processed by the authors

Preliminary *kernel fit* for protection of minority investors and IFRSs' adoption suggests that there might be a reverse U-shaped connection between these two variables (**Figure no. 1**). However, a more detailed analysis is required.

3. Results and comments

3.1. OLS and Stochastic Frontier estimates

We initially run a preliminary an OLS regression. The results are reported in Column 1 of **Table no. 2**.

Table no. 2. Protection of Minority investors and IFRSs' adoption

A) Full sample: 109 countries

	(1)	(2)	(3)
	OLS	Stochastic Frontier Analysis (SFA)	Instrumental Generalized Method of Moments (GMM)
IFRSs adoption dummy	90.261***	90.263***	227.942***
	(28.687)	(23.675)	(75.836)
IFRSs adoption dummy squares	-41.614***	-41.614***	-109.133***
	(14.295)	(11.699)	(37.790)
Common Law dummy	-52.837***	-52.837***	-70.199***
	(18.706)	(18.735)	(23.622)
Common Law dummy squares	26.145**	26.145***	32.585***
	(10.742)	(9.978)	(12.483)
Getting Credit variable	0.356***	0.356***	0.323***
	(0.094)	(0.088)	(0.094)
Resolving Insolvency variable	0.465***	0.465***	0.442***
	(0.086)	(0.082)	(0.078)
Number of observations	109	109	109
R-squared	0.784		
Wald χ^2		396.12 (Probability=0.000)	
Likelihood-ratio test of null that is no *technical inefficiency* component		χ^2=0 (Probability=1.00)	
GMM C statistic χ^2			5.765 (Probability=0.056)
Hansen's J χ^2			2.181 (Probability=0.536)

B) OECD countries: 35 countries

	(1)	(2)	(3)
	OLS	Stochastic Frontier Analysis (SFA)	Instrumental Generalized Method of Moments (GMM)
IFRSs adoption dummy	98.168***	98.168***	100.394**
	(21.658)	(35.612)	(46.291)
IFRSs adoption dummy squares	-38.304***	-38.304**	-33.657
	(8.877)	(17.305)	(22.115)
Common Law dummy	-54.731***	-54.731	-64.098***
	(16.231)	(35.040)	(17.722)
Common Law dummy squares	20.666**	20.666	21.605**
	(9.175)	(17.991)	(9.762)
Getting Credit variable	0.048	0.048	-0.368
	(0.234)	(0.151)	(0.228)

Resolving Insolvency variable	0.126 (0.334)	0.126 (0.223)	0.015 (0.251)
Number of observations	35	35	35
R-squared	0.718		
Wald χ^2		88.96 (Probability=0.000)	
Likelihood-ratio test of null that is no *technical inefficiency* component		χ^2=0 (Probability=1.00)	
GMM C statistic χ^2			1.179 (Probability=0.555)
Hansen's J χ^2			2.131 (Probability=0.345)

C) Non-OECD countries: 74 countries

	(1)	(2)	(3)
	OLS	Stochastic Frontier Analysis (SFA)	Instrumental Generalized Method of Moments (GMM)
IFRSs adoption dummy	95.750** (37.733)	95.747*** (29.584)	300.574*** (98.120)
IFRSs adoption dummy squares	-44.770** (18.629)	-44.770** (14.568)	-147.844*** (48.545)
Common Law dummy	-59.602*** (22.592)	-59.602*** (22.600)	-82.991** (35.547)
Common Law dummy squares	29.525** (13.667)	29.525** (12.052)	40.369** (17.888)
Getting Credit variable	0.405*** (0.117)	0.405*** (0.112)	0.382*** (0.122)
Resolving Insolvency variable	0.452*** (0.107)	0.451*** (0.105)	0.431*** (0.110)
Number of observations	74	74	74
R-squared	0.805		
Wald χ^2		305.12 (Probability=0.000)	
Likelihood-ratio test of null that is no *technical inefficiency* component		χ^2=0 (Probability=1.00)	
GMM C statistic χ^2			6.326 (Probability=0.042)
Hansen's J χ^2			1.787 (Probability=0.618)

Notes: Dependent variable: *Protecting Minority Investors* ranks from *Doing Business* index. A greater value reflects a worst situation of minority protection. Robust estimates for OLS. *C*-statistics (Hayashi, 2000) tests the endogeneity of IFRS adoption dummy. It is robust to heteroskedasticity, autocorrelation, and clustering. The null is that IFRSs' adoption is exogenous. According to the values of the test, such null can be rejected. For SFA estimates: a production frontier model. The non-negative distribution component (a measurement of inefficiency) is assumed to be from a half-normal distribution Kumbhakar and Lovell (2000).For GMM estimates, the considered instruments are: Foreign Direct Investments (net inflows, % GDP; averages of all available data between 2000 and 2013), three regions dummies and a dummy for European Union membership. Hansen's (1982) J statistic test whether the instruments are uncorrelated with the error term. It also tests if the equation is misspecified and that one or more of the excluded exogenous variables should actually be included in the structural equation. According to this test, the null hypothesis that our instruments are valid cannot be rejected.

Source: Data processed by the authors

As these results highlight, the impact exercised by the status of IFRSs adoption on the protection of minority investors is statistically significant at 1%. Such impact appears to be a reverse U-shaped one: as the status of IFRSs adoption moves from "non-adoption" to "partial adoption", the minority investors' protection seems to be worsening in relative terms. The mix of IFRSs and national GAAP makes less transparent the information flow and does not seem to support a better assessment of minority investors' situation. With the shift to "full adoption" of IFRSs, the situation clearly seems to improve. 'Full adoption' contributes to the 'extent of disclosure' and 'ease of shareholder suits' (access to documents and other evidences in case of trails). However, one can notice that such effect displays a certain degree of asymmetry, as reflected by the levels and squares coefficients. In other words, the beneficial effect of IFRSs' adoption can be better evidenced for high ranks of minority shareholders' strength of protection. Still, the 'net' effect of IFRSs' adoption on minority rights is largely positive.

From the control variables, the distinctive features of common law-based legal systems provide a strong support for minority shareholders' protection. This effect is U-shaped: countries with mixed legal systems benefit from better minority shareholders' protection. Particularly, the favourable impact of the legal system's architecture and practices seems to be stronger in countries combining elements of common law with civil or Muslim law.

The overall conditions of the borrowed financial resources' markets, as are these captured by the strength of credit reporting systems and the effectiveness of collateral and bankruptcy laws in facilitating lending, contributes to a significant improvement in the ranking of a country, in terms of minority investors' protection. The same type of effect is exercised by the way in which a country deals with the weaknesses in the existing bankruptcy law and the main procedural and administrative bottlenecks in the insolvency process.

Furthermore, we investigate the possibility of several frictionary mechanisms leading to a relative inefficiency of the associated transmission channels for the considered explanatory variables. Such factors can be, for instance, related to the severity of asymmetric information issues between majority and minority investors, imperfections of financial markets' institutions and mechanisms or to social and cultural practices and norms. Also, they can be related to regional trends or international organizations and institutions' membership. For testing, we involve a *Stochastic Frontier Analysis* (SFA) framework.

In the respective framework, a perturbation to the structural model is assumed to incorporate two components (see Kumbhakar & Lovell, 2000). The first component is assumed to have a strictly non-negative distribution and it is labelled as the *inefficiency term,* while the second component (*the idiosyncratic error* displaying a normal distribution) is assumed to have a symmetric distribution. The existence of the first term lowers the outcome of the 'production factors' or, alternatively, raises the costs associated to a given outcome level. We involve a 'production function' for minority protection and a time-invariant parameterization of the *inefficiency term*. A one-sided generalized likelihood-ratio test (see Gutierrez et al., 2001) is applied and such test tends to accept the null of no inefficiency component: there is no shortfall of the observed protection of minority shareholders as output from maximum feasible output that can be obtained by taking into account the 'production factors' represented by the considered explanatory variables. In this case, the stochastic frontier model tends to generate results close to an OLS model with normal errors. Indeed, the SFA preserves all the results of the OLS with close values of the corresponding parameters (Column 2 of **Table no. 2**).

3.2. Reverse causality check

One might argue that there is a potential reverse causality issue in the specification of our model: the implied causality can run both ways between IFRSs' adoption and minority investors' protection. A strong pro-business economic and social environment can support the adoption of IFRSs, for a further enhancement of transparency and an improvement in financial information quality. In such case, ordinary linear regression generally produces biased and inconsistent estimates (Greene, 2012; Wooldridge, 2010). In order to deal with such problem, we use an instrumental-variables regression with *Generalized Method of Moments* (GMM) method (Hall, 2005). It involves some moment or *orthogonality* conditions and allows for heteroskedasticity in errors.

We instrument for the potential endogeneity of IFRSs' adoption by considering several variables. We use, as instruments, *Foreign Direct Investments* (FDI): net inflows, % GDP, averages for the time span between 2000 and 2013, as provided by World Bank, 2014. There are evidences in the literature of dual connections between the status of IFRSs' adoption and the existing and expecting FDI (see, for instance, Márquez-Ramos, 2008; Ramanna & Sletten, 2009): a country is more likely to adopt IFRSs, if it's trading partners or geographically neighbouring countries are IFRSs' adopters. Based on similar arguments, we consider as instruments three regions' dummies (for America, Asia, Africa). In order to reflect the consequences of IAS Regulation, adopted by the European Union in 2002, a dummy for European Union's membership is used. The results are reported in Column 3 of **Table no. 2**.
First, we test to see if the endogenous regressors are in fact exogenous. For such, the OLS estimator is more efficient. Depending on the strength of the instruments, the loose in efficiency, by using an instrumental-variables estimator, can be significant. However, the *C statistic* (also called 'difference-in-Sargan statistic'; robust to heteroskedasticity, autocorrelation and clustering; Hayashi, 2000) shows that this is not the case. The null that IFRSs' adoption is exogenous, in respect to the considered instruments, can be rejected. These instruments appear to be correspondingly correlated with the included endogenous regressors, but uncorrelated with the error term. Second, since our model is an over-identified one (implying that the number of additional instruments exceeds the number of endogenous regressors), we can test whether the instruments are uncorrelated with the error term. Also, we test if the model is misspecified and that one or more of the excluded exogenous variables should actually be included in the structural equation. According to the Hansen (1982) test, the null hypothesis that our instruments are valid cannot be rejected. Overall, we accept that IFRSs' adoption can be seen as at least partially endogenous in respect to minority shareholders' protection and we consequently correct for this in the GMM framework

Here, the key results are maintained: the *reverse U-shaped* effect exercised by IFRSs' adoption is present at a statistical significance of 1%. Still, as a result of the corrections for OLS estimators' biases and due to that the instrumental-variables' estimators exhibit lower biases – since the instruments are strongly correlated with the endogenous variable – the occurring amplitude of the corresponding parameters is higher in comparison with OLS and SFA estimates.

The same applies for the *U-shaped* associated with the common law dummy, while, in this case, the increases in parameters in comparison with OLS and SFA estimates are less substantial. For *Getting Credit* and, respectively, *Resolving Insolvency* the results are comparable with the ones previously obtained.

All together, these findings indicate that, in the full sample of 109 countries, the positive effect of IFRSs' adoption on minority investors' protection is robust across estimation methods and its amplitudes exceeds those associated with the characteristics of the legal systems, conditions of borrowed financial resources' markets and insolvency resolution procedures.

3.3. Robustness check: OECD versus non-OECD countries

One question that can be raised in relation to our results is: how robust remain our results if the overall development status for the considered countries is taken into account? In order to provide an assessment, we split our full data sample in two sub-samples: for OECD and, respectively, non-OECD countries. The results are show in Panel "B" and Panel "C" of Table no. 2.

For OECD countries, OLS and SFA estimates for the effects of IFRSs' adoption show the same profile as for the full sample. Still, in GMM framework, the non-linear effects are no longer statistically significant, while the significance for levels' coefficients is 5% and the corresponding amplitude is half that of the full sample (and around one third compared to the non-OECD countries).

The characteristics of the legal systems maintain the *U-shaped* effect for OECD countries. Still, if these are statistically significant in OLS, their significance is lost in SFA. For the GMM estimates, the non-linear component is significant only at 5%, with lower breadth/span of the induced effects in relation to the full sample. Interestingly, the significance of conditions of borrowed financial resources' markets and insolvency resolution procedures is completing vanished in OECD data sample. For these countries, the two control variables play virtually no role in explaining the protection of minority investors' rights.

For non-OECD countries, the impact of IFRSs' adoption is significant at 1% across all estimation methods and the corresponding amplitude is somehow larger compared to the full sample. With the exception of non-linear components of legal systems' distinctive features, which are significant at 5%, all the control variables display a statistical significance of 1% and induce similar effects as in full sample, with a relatively higher dimension.

4. Conclusions

Overall, there are some clear structural differences in the nature, efficiency and consequences of the involved transmission channels between OECD and, respectively, non-OECD countries. So, it can be argued that the global development level modulates the impact of the considered variables on the minority shareholders' protection. One can advance the argument that a higher level of economic development is usually associated with a strong supportive business environment (including a well-articulated and effectiveness protection of minority investors). However, this argument should be nuanced, since the influence of IFRSs' adoption is preserved with different ranges and significance in both samples. In other words, even if a consistent system of minority protection is already in place, the IFRSs' adoption can still contribute to its further enhancement.

Probably the most important policy implication of our findings consists in the idea that the adoption of IFRSs strongly supports the protection of minority investors' rights. Also, our results draw attention to the fact that best results are achieved for the full adoption of international standards, while the mix of these with national standards leads to a less clear effect.

Furthermore, a design of the legal system based on common law does not automatically guarantee the best protection of minority investors. Rather, a mix of common and civil / Muslim laws performs better in respect to such outcome.

Finally, an improvement in lending market conditions as well as efficient mechanisms for insolvency resolution can support the protection of minority investors especially in developing countries.

The existence of the bi-univocal relationship between IFRSs' adoption and the distinctive features of the business environment suggests that even if IFRSs' adoption is an exogenous policy measure, the ex-ante existence of a corresponding architecture of the business environment can contribute to the *de facto* implementation of IFRSs. This last connection requires further analysis.

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