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THE EFFECT OF EXPERIENCE, EDUCATION AND POLITICAL LINKS ON FIRMS'
PERFORMANCE: EVIDENCE FROM A LATIN AMERICAN COUNTRY, THE
CASE OF MEXICO

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Abstract:

This paper analyzes the effect of the previous experience, education levels and political links of directors and top executives on their firms' performance. Some of the main variables of experience come from directors having previous positions, such as CEO or top officer of other firms. Variables in education come from whether they have a bachelor's degree or a master's degree, for example. The case of political links analyzes whether top executives and directors have a relationship with politics. Data is constructed from an interview panel with 61 different firms starting in 2013 and ending in 2019. Results are robustly, econometrically examined, and the recorded impact of experience and education are as expected, measured using *Tobin's Q*. However, having political links negatively affects firms' performances in Mexico, due to the level of corruption in this country, so the market takes this fact as a negative, as it is also evidenced in the literature review for the case of Brazil.

Keywords: Board Capital, Firm Performance, Political Links, Tobin's Q, Heterogeneous Boards.

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1. Introduction

The relationship between board diversity and firm performance has been researched, where boards' characteristics such as education level, gender, age, experience, and other variables are recorded. It is analyzed here, to what extent their experience, previous positions, education level and political links could have an impact on their firm's performance, as Pombo, Pinto-Gutiérrez and Villamil-Días (2019) point out. There is other related literature where the board's political connections are considered in the firm's performance, such as in Goldman, Rocholl and So (2008), or research where the level of corruption inside an institution impacts performance, as Faccio (2006) demonstrates. Although there is a wealth of literature on this topic, there is room to research the case of firms in Mexico. Thus, this paper analyzes how the levels of education, experience and political links affect a firm's performance in Mexico. To generate robust results, other variables that affect the firms' performance are considered such as financial variables and economic sector variables.

The main contribution of this paper is to validate the impact of the differences in characteristics of board members in terms of education, experience, and political links on the firm's performance. The main results are those expected; as experience of top executives and directors increase, there is an increase in the firm's performance, as measured by *Tobin's Q*. In addition, experience and education are analyzed in terms of each group, top executives and directors, and results are as expected and econometrically robust. Finally, it is important to highlight that the relationship between the firm's performance and its political links is negative in the case of firms in Mexico, which can be explained by corruption in the country.

This paper is divided into five sections. The first section is the introduction, and in the second section the literature review of the theoretical framework is presented, where the main contributions from the field are highlighted. The third section presents the data and descriptive statistics to glean the main conclusions from the data, and in the fourth section the results from the econometric model and its analysis are reported, where one can validate the robustness of the model and the impact of the explanatory variables in *Tobin's Q*. The conclusions and recommendations are made in section five.

2. Literature review

Literature review can be classed according to main variables what impact the firm's performance as this paper presents. One can divide these variables in three main groups: financial where Mande, Park, and Son (2012) works though the ways of financing that impact the firm's performance, and Chen, Chung, Hsu, and Wu, (2010) who take the impact of external financing on firm's performance. The second, group points out the importance of political links as Leuza and Oberholzer-Gee (2006) shows, and Goldman, Rocholl and So (2008) who focus their research on analyzing the impact of political connections on the value of companies included in the S&P 500 Index; moreover, Faccio (2006) analyses political connectivity at the business level and its influence on the added value of companies in 47 countries. The third group is related with board information as Pombo, Pinto-Gutiérrez and Villamil-Díaz (2019) show the impact of human capital and experience, Board Capital Index, and a country's external governance on the value of firms.

Financial variables impact on firm's performance

There is literature on the impact of financial, political and board characteristics on firms' performance, specifically, the educational level and experience of the respective members; for instance, Mande, Park, and Son (2012) shows if equity financing can be an option for firms in the USA that explore how to reduce agency conflicts because management's entrenchment and information asymmetry. To corroborate this premise, they take a set of data of 2,049 sample where 288 samples with capital circulation and 1,761 samples with debt circulation from 1998 to 2006. They use an index of corporate governance variables which considers proxies for board and audit committee effectiveness, the role of the CEO, institutional ownership, auditor type and shareholder rights, show a positive correlation with the probability of issuing equity. The econometric model used was a univariate analysis and multivariate regression, OLS and 2SLS, respectively. The final results point out companies with good corporate governance are more feasible to issue equity than long-term debt. Through these models, they discover in univariate and multivariate tests that firms with tough governance have inclination for equity over debt. If the corporate governance index increases, the percentage of companies accepting equity over debt increases. They report that the result is statistically significant and holds after they take the internal relationship between corporate governance and funding.

Similarly, in terms of external financing and its impact on a firm's performance, Chen, Chung, Hsu, and Wu, (2010) examined the effect of external financing needs on corporate governance and the value of a company through OLS, 3SLS and GMM models for the years 1990-2005. In this measure, they considered the following variables: corporate governance index (GIM), which they constructed from Gompers data, which shows 24 characteristics listed between 0 and 1, if their result is higher it is catalogued that their governance disposition is superior, based on company value (*Tobin's Q*), instrumental variables and control variables. The OLS model showed that the GIM had a negative ratio of 0.20% over the value of industrial firms, indicating that companies with superior governance process are inclined to have a greater market valuation. However, the 3SLS and GMM models, in pointing out similar results, did not prove to be as significant compared to the OLS model. For the instrumental variables: investment opportunities and product market uniqueness, all three models showed that industries have negative associations of 2.46% with anti-procurement market dispositions; and the control variables show that external financial leverage has a positive relationship with company performance in all three models. On the other hand, they found that companies in the technology sector are inclined to search qualitative improvements in their governance practices, because they show better expansion opportunities and have external financing needs. In addition, bad practices on the part of corporate governance lead to higher costs for asymmetric information and, consequently, an increment in the costs of obtaining external capital.

Political variables impact on firm's performance

On the other hand, political environment and its impact on a firm's performance is researched by Leuza and Oberholzer-Gee (2006). In their paper they analyzed the link between political connections and foreign capital investment employed in the financing strategies of a company; where, they considered the performance of 130 Indonesian firms and a contrast of presidential regimes (Suharto, Habibie, and Wahid), which was divided into four periods covering the years from 1995 to 2001. In the first, second and third scenarios, they showed that firms with strong political connections tend to decrease their probabilities of holding foreign securities by 54% and that firms with a greater effect of internal competitiveness are positively related to external financing options. In the fourth scenario, they noted that firms with close political relations increased the probability of investing in a foreign security privately than in the stock market by 57%. In the fifth scenario, they found that before and during the Asian crisis, during Suharto's and

Habibie's rule, the probability of financial support to companies linked to their government grew by 82%, and firms distanced from political connections increased their levels of returns on foreign securities by 68%. In the sixth and seventh scenarios, panel data corroborated that changes in political regime had significant consequences on companies with high political connections. Thus, they conclude that firms with greater political influence prefer less liberalization and those with weak political connections have a greater incentive to rely on foreign financing.

In fact, other work where political impact is relevant is found in Faccio (2006), who addresses political connectivity at the business level and its influence on the added value of companies in 47 countries, collecting data from 20.202 companies and information on politicians with different ranks. She evaluates the response of the percentage of politically connected companies from the total number of companies per country about the regulatory environment, the perception of corruption, the degree of openness to foreign investment, the regulatory framework in terms of political conflicts of interest, democracy, education, press freedom and economic development. Tobit regressions of two limits are formed, univariate and multivariate estimates, the latter having various specifications, perceived corruption, and restrictions on investment from abroad, which are significant and robust enough to explain the political connectivity of firms in the sample countries. The following situations represent the events through which it is examined as to whether political connections generate added value to companies: the unexpected announcement of the nomination of a politically affiliated member to the board, the acquisition of more than 10% of a company's shares by said member, or the candidacy for political office of a board member or shareholder with at least 10% of a company's shares. The identification of CARs in the days before and after the events described in the total sample is 1.43%. On the other hand, when a member of the board or shareholder of the company runs for or accedes to a political position the return is 2.29%.

However, when a political agent acquires shares or forms part of the company's board the return estimate is not significant. In countries with equal or greater than the median perception of corruption in the sample, companies facing unexpected announcements involving political connections present a CAR of 4.32%. In conclusion, the political connectivity of the companies is quite linked to the levels of perception of corruption and the restrictions of foreign investment in the various internal sectors of a country. Besides, the added value that the company gains is mainly

determined by the occupation of a political position by one of the members of the board or a shareholder with decision-making power in the company.

Later, Goldman, Rocholl and So (2008), who also focus their research on analyzing the impact of political connections on the value of companies included in the S&P 500 Index. They do this by collecting a variety of manual data detailing the political background of each board member of the S&P 500 companies throughout 2000 and then ranking those companies connected to Democrats and Republicans; analyzing through univariate estimates and multivariate regressions the profitability of the company's shares after the 2000 presidential elections, adding fictitious and categorical control variables, the dependent variable being Cumulative Abnormal Returns (CAR). In addition, they studied the incidence of added value to a company due to a politician's nomination to its board of directors.

As a result, the authors found that the companies where at least one member of their board of directors had connections with the Republican Party, presented positive and significant returns after Bush's victory, in addition to an increase in value close to 3,0%. This result is maintained after examining other important characteristics of the company, suggesting that the connection with the winning party in the elections generates substantial benefits. On the other hand, as for the announcement of the nomination of a political agent in the board of some company, it was evidenced that more than 63% of such nominations occur the year after the presidential elections and all of them, regardless of the political party, are representatively positive in the company's performance and on average, provide a significant response in the price of the company's shares. In conclusion, the pure existence of a political connection, independent of the position or nature of such linkage, affects the value of the company, in part because of the future profit's valuations made by the market.

In addition, Claessens, Feijend, and Laeven (2008) carry out a study for the case of Brazil during the elections of the years 1998 to 2002 and their subsequent years, with the objective of analyzing the relationship between the political connections on the returns of the shares of Brazilian companies, and their access to greater bank financing. To do this, using an OLS model, they showed that when the companies' contributions towards financing the candidates' campaigns increased by 4.5%, higher stock returns were tested considering the results of the elections. In addition, the link of political favors increased by 12.1% facilitating access to obtain more preferential bank financing and will continue to increase substantially during the following years,

these figures of bank credit granting to taxpaying companies represented 0.2% of GDP annual for the analysis period. Given this, they concluded that there are greater gaps between the political connections of companies in emerging markets and the financial channel is one of the most relevant, however, the results showed that the rents of corruption are particularly high when the government intervenes in the operation of companies.

Board variables impact on firm's performance

Finally, there is an important contribution in the field made by Pombo, Pinto-Gutiérrez and Villamil-Díaz (2019) where they show an important contribution in empirical evidence on firm performance and changes in firms' value for Latin American firms. The main objective is to evaluate the impact of human capital and experience, Board Capital Index, and a country's external governance on the value of firms. The methodology adopted is supported by Hillman, Cannella, and Paetzold (2000) and Hillman and Dalziel (2003) where directives' skills and knowledge (human capital) are taken as main explanatory variables of firms' value what is approached by Tobin's Q; in addition, experiences and network of links are also considered. The data comes from a longitudinal database from 2001 to 2012 of 442 non-financial firms listed in Argentina, Brazil, Chile, Colombia, Mexico, and Peru, for a total of 4,665 firm-year observations within the panel. The econometric model used was a Pooled OLS where there are controls for fixed effect such as year, industry effect and others.

The main conclusions are those expected by the authors; they show that several individual characteristics associated with board capital have a positive impact on firm performance, as measured by Tobin's Q. Moreover, they find that more heterogeneous boards with directors holding law degrees and master's degrees in business administration (MBA) increases firm value. The marginal effect of changes in the board human capital index on firm value is 12% while the effect of changes in the relational capital index is 9%. In addition, with a weak internal governance, the marginal effect of changes in the board capital index on firm value is at least 1.5 times larger than it is for the sample with high governance standards. In the case of boards with low independence, the marginal effect of the Board Capital Index is 4 times greater with respect to the sample with highly independent boards.

Although these works contribute to understanding firm performance, there is room to consider the interaction of variables of type experience, education formation, and political links; therefore,

the contribution of this paper is the interaction of these variables to explain the performance of Mexican firms.

3. Data and descriptive statistics

The literature review has shown that the increase or decrease in the value of a company depends on its financial characteristics, the level of experience and education of its respective directors and their political connections. Therefore, an empirical test was carried out for the case of 75 Mexican firms where the econometric approach was developed through a data panel, which was selected from the recommendation of the different empirical works reviewed, for a pertinent reading of the results considering the availability of data. Mande, Park, and Son (2012), and, Chen, Chung, Hsu, and Wu, (2010) to carry out their methodology, they selected a Panel Data using an OLS model to determine if the financial variables explained the performance of the firms. For their part, to provide an analysis of the relationship between a company's political connections and its performance, Claessens, Feijend and Laeven (2008), and Faccio (2006) considered an OLS model, allowing them to obtain robust results.

Therefore, there are different models which one can use to validate the relationship between board experience and education, and political links; for instance, Chen, Chung, Hsu, and Wu, (2010) use 3SLS model; meanwhile, Leuza and Oberholzer-Gee (2006) take a discrete probability model; on the other hand, Pombo, Pinto-Gutiérrez and Villamil-Díaz (2019) use a Data Panel Model under fixed effect model. The election of these model is due to type of Data and hypothesis that each author wants to validate. In this paper the econometric model elected was a Data Panel because there is a longitudinal data from Mexican firms, and a short annual period for each individual, in this case Mexican firms. The best Data Panel Model in each case is validate throughout Hausman test.

Finally, in the case of the relevance of the experience and level of education of the board of directors of the companies, Pombo, Pinto-Gutiérrez and Villamil-Díaz (2019), and, Hillman, Cannella and Paetzold (2000), and, Hillman and Dalziel (2003) also made use of an OLS model, random effects, and fixed effects, with which they could determine that these characteristics related to the human capital of the members belonging to the board of directors raise the performance of a company. For this study, the database used covers a period between 2013 to 2019, given the availability of information, which was extracted from *Thomson's Worldscope*.

Stylized facts

The descriptive statistics in Table 1 show the selected variables that were used to carry out the regression in terms of a panel of data, where it is indicated that the dependent variable, *Tobin's Q*, presented an average of 0.69%, its minimum value was 0.008% and its maximum value was 3.58%; indicating that some Mexican companies do not have a good performance and valuation in the market, a root of which they do not have a good financial condition, political connections and human capital. Therefore, the selected independent variables are divided into three groups: independent variables that correspond to the financial characteristics of the firms; the structure of the board of directors, and the index of directors and top executives who have a high level of education and experience, which make part of the board of directors; and political connections.

Thus, for the first group, it can be observed that the *Total Revenue* variable showed an average of \$US 58,643 million; *Market Value for Company* had an average of \$US 106,032 million, and for *ROA Total Assets* was evidenced an average of 5.79%, which showed that there were firms that did present high levels of income due to a solid financial leverage structure, through preferential political relations with the different governments during that period. In the second group, *Board Size* revealed that 14.6 is the average number of members of these firms, its maximum number is 33 members and at least the board of these firms is made up of 5 people, implying that it is of great importance for the performance of the companies, that the control and direction be decentralized; it should be noted that the BCI index was extracted from the board of directors, made up of BRCI (senior executives and directors) and BHCI (senior executives and directors). Where, the variable of the *Directors of BRCI, BRCI, BHCI* and *BCI* had an average of 10, 20.7, 31.3 and 52, respectively. As shown in table 1, that is, there are more directors and senior executives with a high level of education than directors and senior executives with a high level of experience, reflecting that the skilled workforce gives better performance to companies. companies.

Finally, in the third group the *Politics Index* shows that the number of senior executives and managers belonging to the board of directors has a maximum of 7 members related to the political environment and a minimum of 5 members. In other words, the control and direction of the firms has been intricately linked and influenced through the political channel to explain their performance and valuation in the market.

Table 1. Summary Statistics*

Variable	Obs.	Mean	Median	Min	Max
<i>Tobin's Q</i>	346	0.699	0.385	0.00829	3.58
<i>Total Revenue</i> (<i>SUS thousand</i>)	605	58,643	14,634	0	1,038.207
<i>Board Size</i>	273	14.6	13	5	33
<i>Market Value for Company</i> (<i>SUS thousand</i>)	650	106,032	38,758	2,760	1,424,786
<i>ROA Total Assets</i>	643	5.79	4.92	-11.8	36.4
<i>BRCI Directors</i>	671	10	9.98	8	11
<i>BRCI</i>	644	20.7	20.8	17.9	22
<i>BHCI</i>	644	31.3	31.3	28.8	32
<i>BCI</i>	644	52	52.1	46.7	54
<i>Politics Index</i>	644	6.98	7	5	7

* Look at annex 1 for variable specification.
Source: own calculations Stata.

4. Econometric model and empirical results

The data panel is optimal in this research because it collects observations of a certain group (people, companies, countries, etc.) over time, in other words, it is a combination of a time series and a cross section. The basic specification for a panel data model is represented by the following model¹:

$$Y_{it} = \alpha_{it} + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + U_{it} \quad (1)$$

In addition, microdata can be controlled over time and their unobserved characteristics, therefore, because of these peculiarities, they are included in the error of a regression of a data panel. There are three types of data panel: pooled or grouped, static and dynamic (Hill, Griffiths, & Lim, 2011, págs. 540-552). However, according to the results obtained in this work, a static data panel was created (fixed effects and random effects). In the first instance, the pooled panel differs from the other two, because its data is presented in a grouped way, that is, its individual differences are not observed, in addition to this, the betas of this model are taken as constants through of time and errors are assumed with zero and constant mean, as follows:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it} \quad (2)$$

¹ This equation contains the dependent variable (Y), a vector of intercepts (α) between $1 \times n + t$ parameters, (β) is vector of (k) parameters, (X_{1it}) is the i -th observation at the moment t of the independent variables (X) and the error U_{it} (Hill, Griffiths, & Lim, 2011, págs. 540-552).

Second, a static data panel contains two types of models: fixed effects and random effects. The first model presents betas that are different from their individuals, unlike the pooled panel, it contains fixed intercepts that capture the characteristics of the data; This type of panel is used when the observations are numerous and there is a short period of time, as evidenced by the following formula:

$$Y_{it} = \beta_{1i} + \beta_{2i}X_{2it} + \beta_{3i}X_{3it} + e_{it} \quad (3)$$

In contrast, the second random effects model maintains the individuality of the observations, but in this case, it assumes that the individuals were selected randomly; in turn, the error like the betas happens to obtain an individual effect, as follows²:

$$Y_{it} = \bar{\beta}_1 + \beta_2X_{2it} + \beta_3X_{3it} + v_{it} \quad (4)$$

It should be noted that the dynamic data panel will not be investigated in depth, since based on the results it is not the source of the development of the econometric methodology.

Thus, this section deals with an econometric model which fits with the theory and data from the previous sections. The econometric model follows Pombo, Pinto-Gutiérrez and Villamil-Díaz (2019) closely, but it considers the fact that the data panel is for a single country, Mexico, where data comes from 39 Mexican firms, and introduces the key variable Politic Index. According to Hill, Griffiths, and Lim (2011) a panel model can be of Random Effect or Fixed Effect type as equation 5 shows.

$$Q_{i,t} = \beta_1BCI_{i,t} + \beta_2DIRECTORS_{i,t} + \beta_3FIRM_{i,t} + \beta_4POLITICS_{i,t} + \mu_i + \varepsilon_{i,t}, \quad (5)$$

Where:

- $Q_{i,t}$ is the Tobin's Q from firm i at the year t .
- β_1 is a row vector of coefficients of type $BCI_{i,t}$, where $BCI_{i,t}$ is a column vector of Board Capital variables and indexes according to *Blau Index* (1977)³.

² $\bar{\beta}_1$ represents the intersection of the individual effects, and the term (v) is the combination of the error (e) of a normal regression summed with (μ) , representing the individual and random effect of errors (Hill, Griffiths, and Lim, 2011).

³ *Blau Index* (1977) is explained in Annex 1 at the end of this paper.

- β_2 is a row vector of coefficients of type $DIRECTORS_{i,t}$, where $DIRECTORS_{i,t}$ is a column vector of Director Experience Index under *Blau Index* methodology.
- β_3 is a row vector of coefficients of type $FIRM_{i,t}$, where $FIRM_{i,t}$ is a column vector about firms' financial information.
- β_4 is a row vector of coefficients of type $POLITICS_{i,t}$, where $POLITICS_{i,t}$ is a column vector about top executives and directors' political links.
- μ_i considers the heterogeneity from each firm.
- $\varepsilon_{i,t}$ is the regression error.

It is important to describe each group of variables; *Tobin's Q* is calculated as the ratio between market value equity plus book value of debt and book value of the preferred stock to book value of assets. $BCI_{i,t}$ is a set of variables that contains information related to Board Human Capital Index under *Blau Index* methodology (**BHCI**), and Board Relation Capital Index under *Blau Index* methodology (**BRC**). **POLITICS** is a *Politics Index* that considers the political links from directors and officers, and it is calculated using the *Blau Index*. $FIRM_{i,t}$ considers variables such as Total Revenue, Board Size Market Value for Company, and ROA Total Assets.

Results from the Data Panel model under Random Effects and Fixed Effects are those expected for key variables as Table 2 shows. Upon analyzing the key variables, the results are consistent with the literature; for instance, there is a positive impact on *Tobin's Q* where there is a marginal change on *BRCI* Directors, *BRCI*, *BHCI*, *BCI*, but a negative relation from the *Politics Index*.

Description of Blau Index

It should be noted that the construction of the *Board Capital Index* (**BCI**) was made from the sum of the experience of the members of the board (**BRCI**) and their higher education (**BHCI**). On the other hand, it is presented with the *Blau Index* equation which measures several attributes expressed in the previous table.

$$Blau\ Index = 1 - \sum_{i=1}^k p_i^2$$

Being p the members board proportion who count with every single attribute signaled and k the number of categories of every attribute. If this index presents a higher value, the impact on the firm's valuation is better. It is because the index has information about board education, experience, and political links for each case.

The econometric results are robust, there are control variables from the firms' financial information of which most are statistically significant. Moreover, there is a date variable which considers the dynamics such as trends from each firm, and the number of firms and observations are above 39 and 173, respectively. Finally, it is important to highlight that each model faced the Hausman Test to identify what is the best panel model: **FE** o **RE**; at the end of Table 2 there is the Chi^2 p-value to take the decision, it is reported inside of parenthesis.

Table 2. The Effect of BCI on firm performance

Variables	Model under BRCI Directors Index (1)	Model under BRCI variables (2)	Model under BHCI variables (3)	Model under BCI Index (4)	Model under Politics Index (5)
Control Variables					
<i>Ln(Total Revenue)</i>	-0.467**** (0.073)	-0.459**** (0.074)	...	-0.661**** (0.075)	-0.146**** (0.182)
<i>Ln(Board Size)</i>	-0.564*** (0.257)	-0.618*** (0.259)	...	-0.613*** (0.261)	-0.113* (0.340)
<i>Ln(Market Value for Company)</i>	0.603**** (0.114)	0.608**** (0.114)	0.595**** (0.116)	0.609**** (0.116)	
<i>ROA Total Assets</i>	0.037**** (0.009)	0.036**** (0.009)	0.041**** (0.008)	0.036**** (0.009)	0.036**** (0.009)
Key variables					
BRCI Directors	0.476*** (0.188)	...	...	...	...
Index BRCI	...	0.339*** (0.134)	...	...	...
Index BHCI	...	...	0.321** (0.197)	...	...
Index BCI	...	...	...	0.187*** (0.092)	...
Index Politic	...	...	...	...	-7.03** (4.30)
<i>Year</i>	-0.136**** (0.020)	-0.142**** (0.020)	-0.162**** (0.014)	-0.143**** (0.020)	-0.143**** (0.020)
Constant	267.68**** (40.26)	276.11**** (40.75)	304.66**** (27.16)	276.72**** (41.24)	276.72**** (41.24)
Observations	175	173	319	173	173
Number of firms	39	39	61	39	39
R²	0.50	0.50	0.10	0.47	0.28
Housman test Chi^2	0.03 (RE)	0.04 (RE)	0.005 (FE)	0.05 (RE)	0.00 (FE)

****P-value \leq 0.01; ***P-value \leq 0.05; **P-value \leq 0.10; *P-value $>$ 0.10.

Source: own calculations Stata.

⁴ Hausman test compares estimates of fixed and random effects. If systematic differences are found, then the null hypothesis of equality is rejected at 95% confidence, that is, where the p value is less than 0.05, the model is chosen for fixed effects. By the same criteria, if the p value is greater than 0.05, the null hypothesis of equality of estimates must be admitted and the random effects model is selected.

Results analysis

Results are those expected from key variables. If one analyzes the relation between firm performance (*Tobin's Q*) and *BRCI Directors*, the correlation is positive as equation (1) from Table 2 shows. Therefore, one can conclude that if experience of firms' directors increases by 1.0 unit, then, the firm's performance increases by 47.6%. This result is statistically significant to 1% in the Hausman Test, so it speaks of **RE** model. Therefore, there are incentives for firms to hire directors who have been executives in other firms, founded other companies, worked as a freelancer, or in academia academy as professors, or have another type of experience.

Experience from directors and top executives is highly valued by firms. If one analyzes the relation between firm performance (*Tobin's Q*) and *BRCI (Directors and top executives)*, the correlation is positive as equation (2) shows, therefore, one can conclude that if experience of a firm's directors and top executives increase by 1.0 unit, the firm's performance increases by 33.9%. This result is statistically significant to 1% according to the Hausman test, therefore it is **RE** model. Therefore, there are incentives for firms to hire directors and top executives who have been executives in other firms, founded other companies, have worked as a freelancer, or in academia as professors, or have another type of experience.

However, the proportion of board members with a higher education level, such as master's degrees, doctorates or studies abroad, also has a positive impact on the performance and value of the company. This is demonstrated by the results of regression (3), where an increase of 1 unit in the *BHCI* index increases the company's performance (*Tobin's Q*) by 32.1%, which is statistically significant to 1%, indicating that the **FE** model is the efficient. Therefore, Mexican analysis companies have a certain preference when choosing those executives or directors with a variety of university studies, not necessarily focused on the central field that the company develops, giving them added value when proposing their corporate strategies.

The (4) model under the *BCI* Index demonstrate that as total revenues decreased by 1.0%, the performance of the firms suffered a negative effect of 0.66%, which brings to the forefront that these Mexican firms reduced their capital in the short term. Similarly, when the size of the companies' boards of directors decreased by 1.0%, they had a negative impact of 0.61% on the performance of the firms. On the other hand, the market value for the company provided a positive effect of 0.60% on the firms and ROA contributed with 0.036%, that is, when the capacity of the

assets to generate profitability improved, the greater the benefit during the period of analysis. In the case of the BCI Index, which is made up of the board human capital index (BHCI) and the board relational capital index (BRCI), which adds senior executives and directors, it was evidenced that with an increase of one BCI unit, the company's *Tobin's Q* performance increased by 18.7%. This result is statistically significant to 1%, and it was evidenced under the Hausman Test that the *RE* model is the appropriate. Therefore, it is emphasized that this was an important incentive to hire more personnel with administrative and managerial experience, and with a bachelor's and master's level of education.

Model (5) reveals that the variable *Index Politic* has a negative effect on *Tobin's Q*. It should be noted that this index was made from the number of connections that members of the board of directors have with different political officials, the members of the board of directors who exercised a political role, who ran for a position of a certain magnitude and politicians who were interested in buying shares in the firms. The result observed in the model refers to the fact that when the Index Politic increased, the explanatory variable demonstrated that the firms had a significant decrease in their performance, because Mexico is a country with high levels of corruption, which reduces the confidence of investors towards the companies and affects their administrative legitimacy. This result is statistically significant to 1% indicating by the Hausman test that for this regression the *FE* model has efficient estimators.

5. Conclusions and recommendations

It is concluded that the empirical research presented in the document provides pertinent support to argue for a relationship between the performance of a company and its respective financial characteristics, political connections, corporate governance, and the degree of qualification both in experience and in education of directors and senior executives who are members of the board of directors of a company. On the one hand, there is a positive effect of the corporate governance structure of a company on its performance and higher valuation in the market. Likewise, its financial characteristics in terms of leverage, investment, profitability, assets, and liabilities showed that good performance effectively leads to an increase in its status. However, the documents also indicated that political connections, although can positively affect firms through economic support from the government; can also negatively affect the firm, either due to political leanings or dependence on internal and not external financing. Additionally, the fact that directors

and senior executives with a significant level of experience and education elevates the performance of the firms and consolidates their name in the market.

It is highlighted that the statistics of the variables selected for the execution of the data panel indicate that there were several companies that had low levels of current assets that even reached zero. In terms of the size of the board, there were companies that had many members who favored their corporate strategies; they presented a good market valuation, Finally, it was evident that both higher education and experience are important elements to be part of the board of directors, however, the firms integrated directors and senior executives with higher education to a greater extent.

This research analyzed how board capital affects the firms' performance on industrial firms from Mexico. The board capital considers different capital indexes as *BRCI Directors* which takes the experience level of the director; the result is as expected, as experience increases, there a positive impact on a firm's performance evaluated through *Tobin's Q*, this correlation is evaluated through a RE model where one can measure the impact as 47.6% as *BRCI* increases in a unit. Other capital approximation was through *BRCI* for directors and top executives where experience in both cases is considered; in this case, the best model is *RE* under that was validated under *Hausman Test*. The result is according to the theory, as *BRCI* increases in a unit the *Tobin's Q* increases by 33.9%. There is other two indexes which take experience and education data from top executives and directors; they are the *BHCI* that takes experience, and *BCI* that takes experience and education. Results for these indexes are those expected, and they align with the results of with *Pombo, Pinto-Gutiérrez and Villamil-Díaz (2019)*, in this paper the *BHCI* coefficient is 0.339, and *BCI* coefficient is 0.187.

Moreover, this paper examines the impact on firms' performances due to political links as *Leuza and Oberholzer-Gee (2006)* do. However, in Mexico's case, it is not well viewed by the market through *Tobin's Q* for top executives and directors to have political links, because Mexico has high levels of corruption, which reduces investors' confidence in the companies, affecting their administrative legitimacy.

Recommendations

It is advised to boards from firms in Mexico that when hiring top executives and directors, they should possess high levels of experience and education, including master's degrees.

Moreover, the board must pay attention to the political links that these new directors and executives may have, since these links can negatively affect a firm's performance.

To improve a firm's performance, it is appropriate for board directors to consider hiring professionals with different areas of knowledge, since this can improve a firm's performance. Moreover, board directors should take into account that the political links of directors and top executives can negatively affect a firm's performance in countries that face high levels of corruption.

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7. Annex 1

This annex describes how the *Blau Index* for each case is calculated. The variables which are taken into account are the following:

Blau Index

BRCI Directors

- Number of directors who had been Chief executive officer (CEO) at other company(-ies) in the same industry as the current company.
 - Number of directors who had been Chief executive officer (CEO) at other company(-ies) in industries other than the current company.
 - Number of directors who had been founding partners. of other companies in the same industry as the current company.
 - Number of directors who had been founding partners of other companies in industries other than the current company.
 - Number of directors who had been a top executive officer at other company(-ies) in the same industry than the current company.
 - Number of directors who had been a top executive officer at other company(-ies) in other industries than the current company.
 - Number of directors who had been a top executive officer and/or director at government companies.
 - Number of directors who were former (or current) members of the board of directors in other companies.
 - Number of directors who had been independent professionals.
 - Number of directors who had been academics (Professors).
 - Number of Directors who have been Politically Connected through the Executive//Legislative branch (National Level).
-

BRCI Officers

- Number of top executive officers who had been Chief executive officer (CEO) at other company(-ies) in the same industry as the current company.
- Number of top executive officers who had been Chief executive officer (CEO) at other company(-ies) in industries other than the current company.
- Number of top executive officers who had been founding partners of other companies in the same industry as the current company.
- Number of top executive officers who had been founding partners of other companies in industries other than the current company.
- Number of top executive officers who had been a top executive officer at other company(-ies) in the same industry as the current company.
- Number of top executive officers who had been a top executive officer at other company(-ies) in industries other than the current company.
- Number of top executive officers who had been a top executive officer and/or director at government companies.
- Number of top executive officers who had been former (or current) members of the board of directors in other companies.
- Number of top executive officers who had been independent professionals.
- Number of top executive officers who had been academics (Professors).
- Number of Top Executive Officers who have been Politically Connected through the Executive//Legislative branch (National Level).

Index BRCI

- *BRCI Directors + BRCI Officers*
-

BHCI Directors

- Number of directors with bachelor's degree in business, organization, and management of enterprises.
- Number of directors with bachelor's degree in economic sciences (other than business, organization, and management of enterprises).
- Number of directors with a bachelor's degree in juridical sciences.
- Number of directors with a Bachelor's degree in Technological sciences and engineering.
- Number of directors with a Bachelor's degree in Logic and Mathematics.
- Number of directors with a Bachelor's degree in Natural Sciences.
- Number of directors with a Bachelor's degree in Medical Sciences.
- Number of directors with a Bachelor's degree in Agricultural Sciences.
- Number of directors with a master's degree in business, organization, and management of enterprises.
- Number of directors with a master's degree in economic sciences (other than business, organization, and management of enterprises).
- Number of directors with a Master's degree in Juridical Sciences.
- Number of directors with a Master's degree in Technological sciences and engineering.
- Number of directors with a Master's degree in Logic and Mathematics.
- Number of directors with a Master's degree in Natural Sciences.
- Number of directors with a Master's degree in Medical Sciences.
- Number of directors with a Master's degree in Agricultural Sciences.

BHCI Officers

- Number of top executive officers with a Bachelor's degree in business, organization and management of enterprises.

- Number of top executive officers with a Bachelor's degree in Economic Sciences (other than business, organization and management of enterprises).
- Number of top executive officers with a Bachelor's degree in Juridical Sciences.
- Number of top executive officers with a Bachelor's degree in Technological Sciences and Engineering.
- Number of top executive officers with a bachelor's degree in Logic and Mathematics.
- Number of top executive officers with a Bachelor's degree in Natural Sciences.
- Number of top executive officers with a Bachelor's degree in Medical Sciences.
- Number of top executive officers with a Bachelor's degree in Agricultural Sciences.
- Number of top executive officers with a Master's degree in business, organization and management of enterprises.
- Number of top executive officers with a Master's degree in economic sciences (other than business, organization and management of enterprises).
- Number of top executive officers with a Master's degree in Juridical Sciences.
- Number of top executive officers with a Master's degree in Technological sciences and engineering.
- Number of top executive officers with a Master's degree in Logic and Mathematics.
- Number of top executive officers with a Master's degree in Natural Sciences.
- Number of top executive officers with a Master's degree in Medical Sciences.
- Number of top executive officers with a Master's degree in Agricultural Sciences.

Index BHCI

- *BHCI Directors + BHCI Officers.*

Index BCI

-
- *Index BRCI + Index BHCI.*

Index Politic

- Number of Top Executive Officers who have been politically connected through other entities at the National or Federal Level.
- Number of Top Executive Officers who have been politically connected through state level.
- Number of Top Executive Officers who have been politically connected through other levels.
- Number of politically connected directors (Whatever type of connection).
- Number of Directors who have been politically connected through other entities at the National or Federal Level.
- Number of Directors who have been politically connected through state level.
- Number of Directors who have been politically connected through other levels.

Source: own calculations Stata.

Description of Blau Index

It should be noted that the construction of the *Board Capital Index* (BCI) was made from the sum of the experience of the members of the board (BRCI) and their higher education (BHCI). On the other hand, it is presented with the *Blau Index* equation which measures several attributes expressed in the previous table.

$$Blau\ Index = 1 - \sum_{i=1}^k p_i^2$$

Being p the members board proportion who count with every single attribute signaled and k the number of categories of every attribute.

List of firms included in the sample	
Ticket(Thomson Reuters Eikon)	Common name of the company
AC.MX	Arca Continental SAB DE CV
AEROMEX.MX	Grupo Aeromexico SAB de CV
ALEATIC.MX	Aleatica SAB de CV
ALFAA.MX	Alfa SAB de CV
ALPEKA.MX	Alpek SAB de CV
ALSEA.MX	Alsea SAB de CV
AMXL.MX	America Movil SAB DE CV
ASURB.MX	Grupo Aeroportuario del Sureste SAB de CV
BACHOCOB.MX	Industrias Bachoco SAB de CV
BAFARB.MX	Grupo Bafar SAB de CV
BIMBOA.MX	Grupo Bimbo SAB de CV
BOLSAA.MX	Bolsa Mexicana de Valores SAB De CV
BSMXB.MX	Banco Santander Mexico SA Institucion de Banca Multiple
CEMEXCPO.MX	CEMEX SAB de CV
CHDRAUIB.MX	Grupo Comercial Chedraui SAB De CV
CMOCTEZ.MX	Corporacion Moctezuma SAB de CV
CUERVO.MX	Becle SAB de CV
CULTIBAB.MX	Organizacion Cultiba SAB de CV
CYDSASAA.MX	Cydsa SAB de CV
DANHOS13.MX	Concentradora Fibra Danhos SA de CV
EDUCA18.MX	Grupo Nagoin SA de CV
ELEKTRA.MX	Grupo Elektra SAB de CV
ELEMENT.MX	Elementia SAB de CV
FEMSAUBD.MX	Fomento Economico Mexicano SAB de CV
FIBRAMQ12.MX	Macquarie Mexico Real Estate Management SA de CV
FIBRAPL14.MX	Prologis Property Mexico SA de CV
FRAGUAB.MX	Corporativo Fragua SAB de CV
FUNO11.MX	Fibra Uno Administracion SA de CV
GAPB.MX	Grupo Aeroportuario del Pacifico SAB de CV
GBMO.MX	Grupo Bursatil Mexicano SA de CV Casa de Bolsa
GCARSOA1.MX	Grupo Carso SAB de CV
GCC.MX	Grupo Cementos de Chihuahua SAB de CV
GENTERA.MX	Genera SAB de CV
GFINBURO.MX	Grupo Financiero Inbursa SAB de CV
GFNORTEO.MX	Grupo Financiero Banorte SAB De CV

GICSAB.MX	Grupo Gicsa SAB De CV
GIGANTE.MX	Grupo Gigante SAB de CV
GMEXICOB.MX	Grupo Mexico SAB de CV
GMXT.MX	GMexico Transportes SAB de CV
GPH1.MX	Grupo Palacio de Hierro SAB de CV
GPROFUT.MX	Grupo Profuturo SAB de CV
GRUMAB.MX	GRUMA SAB de CV
GSANBORB1.MX	Grupo Sanborns SAB de CV
HERDEZ.MX	Grupo Herdez SAB de CV
ICHB.MX	Industrias CH SAB de CV
IDEALB1.MX	Impulsora del Desarrollo y el Empleo en America Latina SAB De CV
IENOVA.MX	Infraestructura Energetica Nova SAB de CV
INVEXA.MX	Invex Controladora SAB de CV
KIMBERA.MX	Kimberly-Clark de Mexico SAB de CV
KOFUBL.MX	Coca-Cola Femsa SAB de CV
KUOB.MX	Grupo Kuo SAB de CV
LABB.MX	Genomma Lab Internacional SAB de CV
LACOMERUBC.MX	La Comer SAB De CV
LALAB.MX	Grupo LALA SAB de CV
LAMOSAS.MX	Grupo Lamosa SAB de CV
LIVEPOLC1.MX	El Puerto de Liverpool SAB de CV
MEGACPO.MX	Megacable Holdings SAB de CV
NEMAKA.MX	Nemak SAB De CV
OMAB.MX	Grupo Aeroportuario del Centro Norte SAB de CV
ORBIA.MX	Mexichem SAB de CV
PEOLES.MX	Industrias Penoles SAB de CV
PINFRA.MX	Promotora y Operadora de Infraestructura SAB de CV
POSADASA.MX	Grupo Posadas SAB de CV
Q.MX	Qualitas Controladora SAB de CV
RA.MX	Regional SAB de CV
RLHA.MX	RLH Properties SAPIB De CV
SIMECB.MX	Grupo Simec SAB de CV
SITESB1.MX	Telesites SAB de CV
TLEVISACPO.MX	Grupo Televisa SAB
UNIFINA.MX	Unifin Financiera SAB de CV
VALUEGFO.MX	Value Grupo Financiero SAB de CV
VESTA.MX	Corporacion Inmobiliaria Vesta SAB de CV
VISTAA.MX	Vista Oil & Gas SA de CV

VITROA.MX	Vitro SAB de CV
VOLARA.MX	Controladora Vuela Compania de Aviacion SAB de CV
WALMEX.MX	Wal Mart de Mexico SAB de CV

Independent Variables

Subject	Variable Name
FIRM	Shares Outstanding (FY2019 - FY2010)
FIRM	Current Assets (Thousands USD)
FIRM	Fixed Assets (Thousands USD)
FIRM	Cash & Short Term Investments
FIRM	Free Operating Cash Flow
FIRM	Long term Debt
ROA	ROA Total Assets
FIRM	Total Revenue
TR	Total Debt to EV(Enterprise value)
LEVERAGE	Beta
WACCT	WACC Total
FIRM	Revenue Total (Thousands USD)
ROA	ROIC Actual Value
FIRM	Capital Expenditures (Thousands USD)
ROA	ROE Actual Value
FIRM	Total Assets Actual (Thousands USD)
FIRM	Market Capitalization (Thousands USD)
FIRM	Shares OutStanding (Abs Value - Thousands)
FIRM	Market Value For Company
FIRM	Shareholders Equity Actual (USD Thousands)
BS	Board Size
POLITIC	Number of politically connected officers (Whatever type of connection)
BOARD	Total number of current officers
	TOBIN Q