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Global indicator of adherence to the best practices of corporate governance: Mexican stock market corporations

Indicador global de adhesión a las mejores prácticas de gobierno corporativo: sociedades anónimas bursátiles mexicanas

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Abstract

This article offers indicators of adherence to Corporate Governance (CG) in México useful to monitor compliance with common regulations at the Mexican Stock Market Corporations (MSMC).

We use Exploratory Factor Analysis to obtain indicators that reflect different dimensions of CG. The sample comes from the answers provided by the MSMC to the questionnaire of adherence to the Code of Best Corporate Practices in the period 2010-2016.

Thirteen composite orthogonal factors that measure the quality and degree of adherence of companies and sectors to CG best practices are extracted. These factors show the relative position of each company, as well as its temporal dynamics.

The proposed indicators allow the analyst to determine the degree of compliance of CG in different dimensions: strategic management, risk management, audits, operations with related parties, board of directors, among other corporate practices and functions, among others.

There are no performance indicators of compliance with the CG practices that are systematically used in the literature or in the practice of CG in Mexico. The global indicator of adherence to the best Corporate Governance practices (ADHECORP) and the thirteen composite indicators proposed in this article cover this practical gap and allow to enhance research on various CG issues in Mexico.

JEL code: G34, G35, G38
Keywords: Corporate governance; Corporate governance indicators; Mexico; Mexican stock market corporations

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Resumen

Este artículo ofrece indicadores de adhesión a las prácticas de Gobierno Corporativo (GC) en México que permiten monitorear el cumplimiento de ordenamientos comunes de las Sociedades Anónimas Bursátiles (SAB) mexicanas.

Empleamos el Análisis Factorial Exploratorio para obtener indicadores de distintas dimensiones de GC y las respuestas provistas por las SAB al cuestionario de adhesión al Código de Mejores Prácticas Corporativas durante 2010-2016.

Se extraen trece factores compuestos ortogonales que miden la calidad y grado de adhesión de las empresas a las mejores prácticas de GC. Estos factores muestran la posición relativa y dinámica temporal de cada empresa.

Los indicadores determinan el grado de cumplimiento de GC en distintas dimensiones: administración estratégica, administración de riesgos, auditorías, operaciones con partes relacionadas, consejo de administración, entre otras prácticas y funciones societarias.

La literatura empírica de GC en México carece de indicadores de desempeño y cumplimiento a las prácticas de GC que permitan comparar el desempeño relativo y temporal de las empresas y los sectores. El Indicador Global de Adhesión a las mejores Prácticas de Gobierno Corporativo (ADHECORP) y los trece indicadores compuestos propuestos en este estudio cubren esta brecha y apoyan la investigación sobre GC en México.

Código JEL: G34, G35, G38
Palabras clave: Gobierno corporativo; Indicadores de gobierno corporativo; México; Sociedades anónimas bursátiles

Introduction

Corporate Governance (CG) is a fundamental element in improving economic efficiency, boosting growth, and fostering investor confidence. CG encompasses an entire set of relationships between the governing body of a company, its board of directors (Board), its shareholders, and other stakeholders, providing a structure for the setting of objectives by the company, as well as the means to achieve them and to monitor compliance (OECD, 2004).

The institutionalization of how the management structure should relate to shareholders and stakeholders drove the analysis of CG in companies (Richart, Martínez, & García, 2011), a line of research that, until then, had been considered part of agency theory, thus giving it its own identity. According to Farinha (2003), the debate and growing interest in CG stems from 1) financial scandals, e.g., high executive salaries and benefits, as well as executive-driven anti-blocking measures; (2) the effectiveness of control mechanisms; (3) the effectiveness of laws to limit the actions of managers in the steps they take; and (4) the open debate on the effectiveness and efficiency of the leading CG models and structures: American, British, and Commonwealth; the two-tier continental European; Japanese; the family-based Asian model (Tricker, 2015, pp. 147-155); and that of emerging economies.

Authors such as Gompers, Ishii, and Metrick (2003) and Brown and Caylor (2006) have sought to monitor shareholder rights (Cremers & Ferrel, 2014). Others, such as Sarkar *et al.* (2012) examine elements of CG such as board composition and performance, information disclosure, auditing, and even dividend policy. Some others consider the monitoring of specific CG characteristics, such as attendance at Board meetings and whether the guidelines are publicly stated (Brown & Caylor, 2006).

For emerging countries, Briano and Rodriguez (2016) assessed whether institutional factors determine the degree of CG compliance in major companies listed in emerging markets in Latin America, including Mexico. The Corpora#te Governance index used by the authors derives from country codes of corporate practice from 43 reagents grouped into four subindices that are, in turn, integrated with variables to which they assign the same weight. This study allows a comparison of the degree of compliance with CG practices in the four countries included.

Effective Corporate Governance in enterprises strengthens the growth of the economy by fostering the confidence necessary for the proper functioning of a free market economy (OECD, 2004). Monitoring and measuring such effectiveness are essential and should recognize the fact that there is no single CG model since each country has its institutional structure, which determines the checks and balances for compliance.

The interest in the construction of CG Indices (CGI) to quantify the efficiency of companies, reducing multiple characteristics in a few dimensions or composite indicators, has been the object of more studies. However, the diversity of CG models prevailing in the world, as well as the legal, regulatory, and normative conditions specific to each political and economic jurisdiction, make it challenging to propose standardized global indicators from a single model applicable to all contexts.

In Mexico, the Business Coordinating Council (Spanish: *Consejo Coordinador Empresarial*) issued the Code of Best Corporate Practices (Spanish: *Código de Mejores Prácticas Corporativas*, CMPC) in 1999, with its most recent version released in 2018. This code is the basis for the questionnaire to evaluate the degree of adherence and compliance by companies to generally accepted corporate practices. From this questionnaire, individual variables such as i) management discipline, ii) transparency, iii) independence, iv) the effectiveness of the board, v) the responsibility of the board and the directors, vi) rights and equitable treatment of shareholders, and vii) social responsibility, among others, are derived.

However, apart from the contribution of Briano and Rodriguez, there is no composite global indicator to monitor the degree of CG compliance of each company to the CG code in Mexico. There are also no composite indicators that reveal the various dimensions of CG, mainly derived from multivariate analysis allowing for systematic and consistent monitoring of CG dimensions, e.g., management, risk management, transparency, oversight, activities of the board of directors, among others.

The proposal herein contrasts with that of Briano and Rodríguez (2016), who assume equal weights for only four dimensions. Conversely, this proposal eliminates subjectivity in the selection of dimensions, as well as that of their loads. This study includes all variables derived from the questionnaire, allowing the Factorial Analysis to group the indicators according to the correlation between the variables. This procedure also eliminates the subjective elements from the selection of variables. The resulting grouping in each factor comes from objective statistical criteria; therefore, each factor represents composite characteristics of corporate governance with analytical support. This approach also recognizes that there is no single CG model beyond the one that gives rise to the adherence questionnaire itself.

This article contributes with the generation of a Global Indicator of Adherence to Best Corporate Governance Practices (ADHECORP) that quantifies the degree of adherence of Mexican Stock Market Corporations (SAB) to the recommendations contained in the CMPC. The above is an indicator of the degree of compliance with the Mexican Best Corporate Practices constructed from 13 dimensions (compound factors) of the variables extracted from the SAB. A characteristic of the ADHECORP global indicator proposed in this article is its ability to monitor the main dimensions of adherence and compliance contemplated in the CMPC. Additionally, it suggests new dimensions that allow for the follow-up of stylized facts of corporate governance identified by international bodies such as Management, Transparency and Monitoring, and the Board of Directors (OECD, 2017).

Four sections comprise this article. The first section presents a review of the literature on the development of Corporate Governance indicators at the international and national levels. The second section presents the methodology used to obtain the CG indicator, in particular, the multivariate analysis used. The third section presents a descriptive analysis of the data collected from the CG Composite Indicators taken from the CMPC and the extraction of the Composite Indicators. The study also shows a case analysis to illustrate the use of the indicators and, finally, the fourth section of this article is the conclusion.

Literature Review

Corporate Governance

There are different theories and models to explain the types of CG in the world. The traditional approach rests on the principle of maximizing wealth for shareholders, whose origin comes from the postulates of economic theory based on Adam Smith. Later, Adolf Berle and Gardiner Means, proposed the concept of separation of ownership and control *(The Modern Corporation and Private Property*), asserting that, if the ownership of large corporations disintegrates, the actions that their owners can take concerning the management of the enterprise are practically nil. In his article, *The Nature of the Firm*, Ronald Coase (1939) identifies the business as an instrument that is mostly at the service of economic efficiency. These concepts generated in the 1930s have become fundamental elements of basic CG research: agency theory, proposed by Michael Jensen and William Meckling (1976).

Agency theory sees the company as a node of contracts between the principal (shareholder) and the agent (management team), where it is necessary to align the conflicting interests of both parties to minimize management costs. In emerging economies, such as Mexico, the institutional context makes the application of agency contracts more costly and problematic due to a high concentration of ownership and the absence of an efficient institutional CG, generating asymmetries between majority and minority shareholders—the Primary/central conflict (Watkins, 2013). Depending on the context, agency theory gives rise to the study of CG under two other approaches. One is the institutional theory approach, promoted by Thorstein Veblen (1904), founder of the institutionalist current of the social sciences, who explains that institutions do not exist as a function of social benefit, but rather because of the inertia of the system; institutions are the rules of the game. The stakeholder theory also arises as a contextual complement to agency theory, broadening the recognition of contracts or relations, implicit and explicit, applied to different groups in the creation and distribution of economic value, among which are identified the government, employees, and creditors, as well as networks of customers and suppliers.

Corporate Governance is a means by which various stakeholders exercise control over a corporation by employing certain rights as outlined in existing legal and regulatory frameworks as well as bylaws (Kose & Senbet, 1998). By definition, according to the OECD (2016), CG includes a series of relationships between the management of a company, its board, shareholders, and other stakeholders. This series of relationships provides a structure for the setting of objectives by the entity, determines the means to be used to achieve them, and monitors compliance. The existence of an effective CG system contributes to increasing the degree of confidence necessary for the proper functioning of a market economy. This degree of confidence results in the reduction of the cost of capital, which encourages companies to use their resources efficiently, thus driving growth.

We distinguish two dimensions of CG. First, the institutional (Paz-Ares, 2004), external or country-level CG (Allayannis, Lel, & Miller, 2012), which is imposed externally and generalized by laws and other regulations as well as by the regulatory institutions of each country, relating to a series of external mechanisms including legislation, regulation, labor markets, and corporate control markets (Watkins, 2013). The second dimension is called contractual, internal, or company-level CG, which is the one assumed internally by each business organization and which adapts to its own needs and strategic objectives.

Codes of Good Governance

In a global economy, there are several standards set by the countries that make up the global bodies. One of them, the Organization for Economic Cooperation and Development (OECD), of which Mexico is a member, issued the "OECD Principles for Corporate Governance" in 1999, revised in 2004. These principles are a reference for each country to publish its own, adapting them to its regulatory framework and business culture (*Consejo Coordinador Empresarial*, 2010).

According to López and Pereira (2006), each country issues its code of good practices or code of good corporate governance, constituting general recommendations on the appropriate structure of the governing bodies and the proper behavior of their members. It is possible to say that, in a global scenario in which markets are increasingly interrelated, codes of good practice seek to improve CG when external market discipline and applicable laws are insufficient to guarantee transparency and the creation of the necessary value for investors and stakeholders.

The elements that exert a significant influence on the institutional CG in Mexico are the Securities Market Law, amended in 2006 to adapt to the international precepts of CG, and the code of good governance, issued by the Best Corporate Practices Committee of the Business Coordinating Council. Subsequently, this code was revised and released for the first time in 2006 and secondly in 2010. In July 2018, the third revised version, now called "Code of Principles and Best Practices of Corporate Governance," was presented, although this last version came into effect 2019. This study considers the 2010 issue because it is the one used by the issuing entities to publicly disclose their performance related to CG during the period covered by this research. The CMPC is voluntary for most companies and mandatory, along with other regulations, for entities that list their shares or issue debt on the Mexican Stock Exchange (Spanish: *Bolsa Mexicana de Valores*, BMV), for financial institutions and retirement savings companies, among others.

The CMPC includes an annex entitled "Questionnaire to assess the degree of adherence to the CMPC." Companies with securities registered in the National Securities Registry are required to disclose, no later than May 31st, the responses to the questionnaire corresponding to the immediately preceding fiscal year, following the general provisions and with provision 4.033.00 section XI of the Internal Regulations of the BMV (Valores, 2017). In this way, the information can be used as metrics by interested persons and organizations such as authorities, the stock exchange, researchers, analysts, and investors, among others.

Corporate Governance Indices, conceptual origin

A CG index has the potential to reveal unobservable latent dimensions impossible to measure in an analysis of individual variables. A CG index is useful for investors to rate the quality of corporate governance (Pillai and Al-Malkawi, 2016); to examine the relationship between adherence to good CG practices and financial performance (Erem, 2017); and as a basis for empirical verification of various CG relationships, among other uses. However, the generation of a CGI is a complex task given the set of dimensions proposed by agency theory and stakeholder theory discussed in the previous section, in addition to the possible subjectivity introduced by the researcher in defining a priori CG measures (Lagos & Vecino, 2011).

The construction of a CGI has involved considering different dimensions not directly observable, focusing on the protection of shareholder rights (Gompers *et al.* 2003; Byun, 2007; Brown & Caylor, 2006). Subsequently, other fundamental dimensions of CG were incorporated, such as the composition and performance of the board, the disclosure of information, the existence and efficiency of audit committees, as well as, eventually, the dividend policy (Byun, 2007). Our GDI also considers other several variables: the annual election of directors; the use or authorization of the poison

pill[2]shareholders; the non-revaluation in the last three years; attendance of directors to board meetings; publicity and compliance of board guidelines by shareholders (Brown & Caylor, 2006).

The methodological variations of the studies (i) consider that CG dimensions contain elements with different loads; (ii) emphasize defense against hostile takeovers; (iii) consider industry sectors, market or geographic region; and (iv) regularly update the elements to be considered according to trends in global CG (Bhagat, Bolton, & Romano, 2008).

Most of the research related to the construction of CGIs comes from developed countries. However, there are rigorous efforts generated in developing countries and emerging markets: Briano and Rodríguez (2016), propose the measurement of CG quality from a sample of companies from four Latin American countries and consider 43 aspects contained in four dimensions: i) Composition and performance of the Board of Directors, ii) Shareholder rights, iii) Ethics and conflict of interest, and iv) Other information related to CG. Al-Malkawi, Pillai, and Bhatti (2014) generate a CG index from companies listed in oil-producing countries in the Persian Gulf using 30 attributes integrated into three dimensions: i) Transparency, ii) Effectiveness of the Board of Directors, and iii) Shareholder rights. In South America, Carvalhal and Câmara (2005), and Assunção *et al.* (2017) researched Brazil, investigating measures of corporate governance complexity of companies listed in the MB&FBovespa stock price index based on two factors: organizational and operational. Pavláková and Kocmanová (2015) also find two corporate governance factors that explain the role of stakeholders and the strategy of Czech corporate corporations.

The list of CG elements is extensive, so deciding which features to include in each unobservable dimension based on a single theory or model can generate biases. The basis of this study is the recognition that there is no unique CG model since each country has its institutional structure, which determines the weights and counterweights for compliance. There is broad recognition by institutions such as the International Monetary Fund, the World Bank, and the OECD that there is no single model of corporate governance, and that it depends on the political, legal, social and structural context in each country (Pillai & Al-Malkawi, 2016).

The indicators of adherence to CG practices proposed in this study follow the norms governing the institutional performance of companies in Mexico. The variables integrate the factors or dimensions in a 'natural' manner without an apriori pre-classification, contrary to what is done in other studies (Ramona, 2014). Our contribution herein is similar to the construction of accession indices by Pillai and Al-Malkawi (2016) for countries of the Persian Gulf. The questionnaire for assessing the degree of adherence to the CMPC defines a diverse and broad set of elements based on the responses of companies listed on the BMV. Unlike other studies, we present more varied and comprehensive CG dimensions, based on these questionnaire elements. The dimensions proposed are the following: the monitoring of shareholder rights and obligations; the functions, composition, structure, and operation of the Board of Directors; the responsibilities of the directors and the audit, evaluation and compensation functions, as well as the financial and planning purposes, which the Board develops through its intermediate bodies or committees, among others.

The number of variables or elements of Corporate Governance extracted from the membership questionnaires to the CMPC is vast, with a diverse subject matter. From these individual CG characteristics, it was possible to generate several dimensions of Adherence to Best CG Practices. These dimensions can, in turn, be used to create CG indicators proposed by bodies such as the OECD to measure corporate governance, transparency, oversight, and the activities of the Board of Directors (OECD, 2017). The following section describes the method used to extract these CG factors.

[2] by

Methodology and factor definition

Method of Extraction of Corporate Governance Factors

While analysis of questionnaire variables may be useful in describing some individual or specific CG characteristics, a method is needed to compactly identify the sometimes-unobservable dimensions of CG identified by the literature. Many of the variables can measure or approximate similar attributes, so it is desirable to have a method that groups them naturally into more compact sets of characteristics. This study uses the Principal Component Analysis (PCA) and the Exploratory Factor Analysis (EFA) as methods for extracting indicators from the data obtained from the questionnaire to evaluate the degree of adherence to the CMPC. These indicators display the quality of the CG of the companies.

The PCA is a descriptive geometric method; its general objective is to discover the underlying structure in a set of *n* units of study, under a series of quantitative *p* variables. It is the statistical behavior of the variables, i.e., the correlation and distance to the means, that reveals the underlying structure of Corporate Governance in Mexico.

Once the underlying structure of CG data is discovered, EFA is used to substantially reduce the size of the set of *p* variables by obtaining through PCA a new smaller set of variables (factors) capable of explaining the common variability found in a group of enterprises. PCA and EFA are treated as complementary procedures, since PCA is introduced, along with other possible methods, in the obtaining of common factors (De Vicente & Manera, 2008).

In summary, while PCA allows for the reduction of the size of the original multivariate information to few components, EFA provides for the creation of indicators, regardless of the variation of the data that explains them and the generation of composite indicators.[3]

Definition of Factors

The questionnaires used to evaluate the degree of adherence to the CMPC provided information on the behavior of the companies regarding the best practices of CG in Mexico. The CMPC is available on the website of the Mexican Stock Exchange, *www.bmv.com.mx*. The issuers report the questionnaires indicated annually, and they reflect the particular perception of each company concerning the practices related to CG.

Each of the years analyzed recorded a total of 241 variables from 108 companies for selected companies listed during the years 2010 and 2016. However, there were cases listed without reporting data. The structure of the code recognizes various issues and recommendations of the bodies known as the Shareholders Meeting and Board of Directors, as well as the functions of Audit, Evaluation and Compensation, and Finance and Planning.

First, the study extracts the main components through the maximization process described in the previous section. The type of matrix used is a correlation, which allows the variables to be normalized and made consistent in terms of their variances.

Table 1 presents the proper values of the components found, as well as the proportion of the variance that explains each component. The Kaiser criterion suggests choosing the number of elements with appropriate values greater than 1. However, under this criterion, there are more than 15 components, which, after a detailed analysis, contain redundant information. This study selected 13 factors that together explain 72.77% of the variance of the CG data in Mexico, maintaining as a general criterion the interpretation of the indicators and the proportion of variance explained.

[3] For further methodological details and formalization of the PCA and EFA methods, see the works of Everitt (2005) and Mendoza (2010).

Table 1
Main components of corporate governance

Component		*Own value*	*Variance*	*Accumulated variance*
1	Strategic management	13.68	0.1503	0.1503
2	Risk management	8.64	0.0949	0.2452
3	Audit follow-up	7.97	0.0876	0.3328
4	Intermediate audit body	6.79	0.0746	0.4074
5	Executive structure management	4.76	0.0523	0.4597
6	Transactions with related parties	3.99	0.0439	0.5035
7	Basic functions of the Board	3.79	0.0416	0.5452
8	Characteristics of directors	3.47	0.0381	0.5833
9	Transparency and ethics	3.15	0.0346	0.6178
10	Board Composition	2.73	0.0300	0.6478
11	Relationship between directors	2.59	0.0285	0.6762
12	Monitoring	2.43	0.0267	0.7029
13	Independence of directors	2.26	0.0248	0.7277

Source: own elaboration

The factorial method employs the components to estimate the individual loads for each of the thirteen factors that comprise the study. The Varimax rotation method identifies the maximum loads, and orders variables according to their relative importance. This ranking results in the thirteen factors in Table 1, and they comprise 91 variables from a total of 241 captured. These factors include all of the topics recommended by the CMPC and consider 32 of the 51 recommended practices.

The variables that dominate the first factor define the "strategic management" of the company (ADMEST).

The second factor comprises variables associated with the management, identification, control, analysis, and disclosure of risks, accompanied by concepts such as quality assurance or value creation, among others. This factor is called "risk management." (ADRISK).

The third factor is composed of variables related to the follow-up that the company gives to the audit function. It captures the audit process to the annual financial information. For this reason, this factor is called "audit follow-up." (SEGAUD).

The fourth factor measures the impact of compliance with the audit function directly by the intermediate body or committee defined by the company for this purpose (Spanish: *órgano intermedio*, OIA). This factor is called the "intermediate audit body" (OIAAUD). It integrates all the variables related to the opinion of the audit committee on the policies and criteria applicable to financial information, among others.

The fifth factor, called "management of directors" (GESTED), weighs compliance with the recommendations made by the CMPC regarding the succession plan, the criteria for appointment or removal, hiring conditions, and the definition and management of remuneration of the general director and other relevant directors. In this case, the bipolarity of the factor suggests that when intermediate bodies are increasingly are composed exclusively of independent owners, this is associated with less compliance with the criteria and conditions established. At the same time, the lower the exclusivity in the membership of independent owners in intermediate bodies, the greater the control of administrative management. In this sense, less exclusivity could mean greater openness.

Transactions between related parties requiring special treatment in the context of Corporate Governance and the agency relationship are part of the sixth factor "related party transactions" (PARREL). The factor is composed of the following variables: analysis of transactions with related parties, and the support given by the OIA to the board. The variable that measures the number of independent directors in each body or intermediate committee has a negative factorial load.

This negative load may reflect the fact that a more significant amount of independent directors exercises an enormous counterweight to the management of the activities of the related parties.

The seventh factor, efficiency of the basic functions of the board of directors (CONADM), includes variables related to the work of the board of directors such as compliance with evaluation and compensation functions and the finance and planning function; the corporate practices carried out. With a negative load, the adequate anticipation of the information for the board meeting. This factor measures efficiency in the fulfillment of functions and practices. From this bipolarity, it is possible to establish the hypothesis that there is (at least empirically) an inverse relationship between the fulfillment of the functions and the anticipation of timely information to the board. According to the literature review, there is no theoretical body of knowledge to explain this possibility. The result is probably due to how the function compliance variables are measured (binary variables) with regard to the information anticipation variable (discrete variable measured in days). Factorial analysis based on distances and variation detects these differences in the measurement and points out in these results the difference with a change of signs.

The eighth factor is made up of the following variables: category and professional activity of directors, the evaluation of confidential matters by directors, the specification of the type of directors in the annual report, and the presentation of the risk report dealt with by the directors. This factor is called “characteristics of the directors” (CONSEJ).

The ninth factor, called “transparency and ethics” (TRANSP), is composed of the following variables: verification of legal operations by the OIA; compliance with the code of ethics; disclosure of improper facts; protection of informants; confidentiality mechanism, among others; and, with a negative load, the integration of independent directors to intermediate bodies. The negative burden of this last factor suggests that greater transparency, ethics, and legality are associated with fewer independent directors of intermediate bodies.

The tenth factor quantifies the impact of independent directors, alternate directors, the number of board members, independent patrimonial directors, and the number of board meetings per year. This factor is known as “Board composition.” (INTCON).

The eleventh factor is the “relationship between directors and alternates” (COTISU), which identifies the fact that the company considers that having an independent proprietary director implies that the alternate director is also independent, in addition to the proprietary director proposing the person to occupy the position of alternate director.

The twelfth factor considers variables related to business ethics and legal compliance by the Board. We name this factor "Monitoring" (VIGILA). It integrates variables such as the verification of legal compliance by the Board; the performance of the auditing function; the information system and protection of informants; the existence of a business ethics code; the proposal for a declaration of a socially responsible company; and the policy for the use of company assets by directors and advisers.

The last factor, number thirteen, identifies the existence of a communication mechanism between proprietary and alternate directors; the effect of patrimonial directors; the establishment of a lower limit considering independent directors and proprietary directors; the link of the OIA with an internal audit; and, with a negative burden, recognizes the related directors. This factor is called “Director Independence" (INDCON). The load associated with the variable director is the highest weight and negative, indicating that the higher the number of related directors, the lower the communication between the proprietary and alternate directors or with the link between the OIA and the internal audit.

Application: Obtaining CMPC adherence factors of Mexican SABs

The relative score per company for each of the thirteen CG indicators results from the sum product of factorial loads and the value of each variable, reported by each company in the questionnaire.

Table 2 displays, as an example, the individual score for each company that makes up the industrial sector, as well as the average for each factor. The score that reflects CG quality as measured by the Global Adherence to CG Best Practices index.[4]

Global Indicator of Adherence to CG Best Practices

The previous year presented individual indicators of adherence to best corporate governance practices, that is, the average score obtained by each company and sector for the indicator of strategic management, risk management, and, in the same way, for the thirteen adherence factors. The Global Indicator of Adherence to Corporate Governance Best Practices in Mexico is a weighted average of each factor's variance, shown in the fourth column of Table 1. Thus, Table 2 displays in the last column, the average global adherence score obtained by each company and by sector in 2016. For instance, the overall score achieved by the Materials sector was 87.906.

Table 3 presents the summary of the Global Adherence Indicator average scores for CG best practices achieved by each sector for the 2010-2016 period. The global indicator summarizes the adherence of each sector to corporate good governance recommendations. The sectors called Fast-moving products, as well as Materials, rank first and second throughout the seven years of the study, while the financial, health, and industrial sectors compete for the last places regularly.

Overall, the average global membership index exhibits very slight variations from 2010 to 2016 (see Table 3), except from 2011 to 2012, when the index dropped four points. If the dispersion of scores between sectors from the standard deviation (last line of the table) is measured, temporary stability is present, which can mean a generalized degree of adherence of companies to standards related to good CG or consistency in the application of good corporate practices within sectors.

The overall adherence rate can also be calculated within each sector to examine the relative position of each company. The tables of the authors, which the reader can obtain by correspondence, present the scores of the companies that make up all sectors. In the Materials sector, the case of the issuer Grupo Collado stands out, which obtained the lowest score in each of the years from 2010 to 2016 and which therefore reflects a very low adherence to the CMPC. Indeed, the Grupo Collado listing was suspended by the BMV in June 2010 for not presenting the report on the degree of adherence to the CMPC for 2009 (El Economista, 2010).

Finally, in addition to the examination by sector and company that can be carried out with the adherence indicators, subindices can be generated based on theoretical and normative CG in three areas emanating from the OECD Principles of Corporate Governance. In particular, the composite indicators herein can be grouped to examine particular attributes of adherence to CG, such as Management, Transparency and Oversight Functions, and the Board of Directors. Table 5 below displays the proposed grouping of adherence indicators.

[4] The reader can obtain similar tables for the rest of the sectors directly from the authors. The catalog containing the sectoral classification at four levels can be found at www.bmv.com.mx/es/mercados/clasificacion (last accessed 19/09/19).

Table 2
Factors per company (scores achieved) and average for the Materials Sector for the year 2016

SAB ticker symbol in the BMV	*Strategic management*	*Risk management*	*Audit follow-up*	*Audit Committee*	*Management of directors*	*Related parties*	*Board functions*	*Directors*	*Transparency and ethics*	*Composition of the board*	*Directors and alternates*	*Monitoring*	*Director independence*		*Score*
	Factor 1	*Factor 2*	*Factor 3*	*Factor 4*	*Factor 5*	*Factor 6*	*Factor 7*	*Factor 8*	*Factor 9*	*Factor 10*	*Factor 11*	*Factor 12*	*Factor 13*	*Sum*	*Base 100*
Tope	*1.728*	*0.695*	*0.638*	*0.461*	*0.265*	*0.181*	*0.106*	*0.115*	*0.125*	*0.097*	*0.047*	*0.079*	*0.069*	*4.606*	*100.00*
CEMEX	1.728	0.695	0.553	0.461	0.248	0.169	0.080	0.115	0.098	0.097	-	0.079	0.006	4.329	93.984
GCC	1.728	0.695	0.553	0.461	0.248	0.169	0.001	0.115	0.098	0.097	0.047	0.079	0.022	4.313	93.641
LAMOSA	1.728	0.695	0.553	0.461	0.248	0.137	0.080	0.115	0.086	0.097	-	0.068	0.006	4.273	92.772
AUTLAN	1.728	0.695	0.553	0.461	0.248	0.169	- 0.051	0.115	0.098	0.097	0.047	0.079	0.022	4.261	92.502
POCHTEC	1.728	0.695	0.553	0.461	0.248	0.169	- 0.051	0.115	0.098	0.097	0.023	0.079	0.022	4.238	91.996
PE&OLES	1.728	0.695	0.553	0.461	0.248	0.169	- 0.051	0.115	0.098	0.097	0.023	0.079	0.006	4.221	91.644
MEXCHEM	1.728	0.695	0.553	0.461	0.248	0.169	- 0.051	0.115	0.086	0.097	-	0.079	0.006	4.186	90.876
AHMSA	1.728	0.695	0.553	0.461	0.248	0.169	- 0.130	0.097	0.101	0.097	0.047	0.068	0.022	4.156	90.215
ALPEK	1.728	0.695	0.553	0.461	0.248	0.169	- 0.104	0.115	0.113	0.097	-	0.068	0.006	4.149	90.081
CYDSASA	1.728	0.695	0.553	0.461	0.248	0.169	- 0.104	0.115	0.101	0.097	-	0.079	0.006	4.148	90.059
CONVER	1.728	0.695	0.500	0.461	0.248	0.137	- 0.051	0.097	0.069	0.097	-	0.079	0.022	4.082	88.620
GMEXICO	1.728	0.695	0.553	0.461	0.141	0.169	- 0.051	0.115	0.086	0.097	-	0.065	0.006	4.065	88.255
TEAK	1.728	0.695	0.553	0.461	0.138	0.169	- 0.078	0.115	0.101	0.097	-	0.068	0.006	4.054	88.000
VITRO	1.605	0.695	0.553	0.461	0.248	0.169	- 0.051	0.103	0.086	0.097	-	0.079	0.006	4.050	87.919
ICH	1.628	0.695	0.553	0.461	0.248	0.169	- 0.051	0.097	0.070	0.097	-	0.056	0.006	4.029	87.461
PAPPEL	1.728	0.695	0.490	0.461	0.123	0.169	- 0.051	0.115	0.086	0.097	-	0.068	- 0.007	3.974	86.272
SIMEC	1.628	0.695	0.495	0.461	0.248	0.169	- 0.051	0.084	0.070	0.097	-	0.056	0.006	3.957	85.910
CMOCTEZ	1.728	0.695	0.553	0.461	0.215	0.169	- 0.376	0.103	0.098	0.097	0.047	0.079	0.022	3.890	84.453
MFRISCO	1.728	0.695	0.553	0.432	0.083	0.101	- 0.051	0.031	0.113	0.097	-	0.068	0.006	3.854	83.675
COLLADO	0.723	0.695	0.361	0.432	0.068	0.169	0.080	-	0.082	0.097	-	0.043	0.006	2.754	59.790
Average	*1.662*	*0.695*	*0.535*	*0.458*	*0.212*	*0.162*	*- 0.056*	*0.100*	*0.092*	*0.097*	*0.012*	*0.071*	*0.010*	*4.049*	*87.906*

Source: own elaboration

Table 3
Scores of Global Indicator of Adherence to Best Corporate Governance Practices by sector, 2010-2016

Sector	*2010*		*2011*		*2012*		*2013*		*2014*		*2015*		*2016*	
	Average score	*Pos.*	*Average score*	*Pos.*	*Average score*	*Pos.*	*Average score*	*Pos.*	*Average score*	*Pos.*	*Average score*	*Pos.*	*Average score*	*Pos.*
MATERIALS	89.219	2	90.223	2	88.831	1	89.183	1	88.856	2	87.913	1	87.906	1
FAST-MOVING PRODUCTS	90.758	1	94.564	1	83.433	2	88.764	2	89.081	1	87.435	2	87.536	2
NON-BASIC USE	84.574	4	81.406	6	81.216	5	86.413	3	86.069	3	84.293	3	84.400	3
HEALTH	80.296	6	79.885	7	81.505	4	77.434	7	77.542	7	83.969	7	84.310	4
TELECOMMUNICATIONS	84.567	5	85.397	4	82.043	3	84.200	4	83.767	4	82.702	4	83.563	5
FINANCIAL	79.254	7	82.384	5	76.180	7	81.611	6	82.558	6	82.717	6	83.284	6
INDUSTRIAL	85.158	3	86.436	3	79.021	6	82.423	5	82.590	5	79.532	5	77.890	7
Average	*84.832*		*85.756*		*81.747*		*84.289*		*84.352*		*84.080*		*84.127*	
Standard Deviation	*4.209*		*5.210*		*3.913*		*4.206*		*4.055*		*2.900*		*3.315*	

Notes: 1) Δ of position - Variation in the position concerning the previous year; 2) Pos.- Relative position of the sector

Source: own elaboration

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Table 4
Average of the ADHECORP index obtained by issuers (2010-2016)

Pos.	*Issuer*	*Sector*	*Average 2010 - 2016*	*Pos.*	*Issuer*	*Sector*	*Average 2010 - 2016*	*Pos.*	*Issuer*	*Sector*	*Average 2010 - 2016*
1	GCC	MAT	94.46	38	VASCONI	CNB	90.66	76	POSADAS	CNB	84.33
2	FRAGUA	SAL	94.20	39	TEAK	MAT	90.62	77	GBM	SFI	84.10
3	FEMSA	PCF	94.14	40	KOF	PCF	90.45	78	GAP	IND	83.99
4	AUTLAN	MAT	94.07	41	CERAMIC	IND	89.85	79	MFRISCO	MAT	83.51
5	POCHTEC	MAT	94.06	42	BIMBO	PCF	89.64	80	MEDICA	SAL	82.68
6	GISSA	IND	93.73	43	ICH	MAT	89.52	81	GFINTER	SFI	81.29
7	GFREGIO	SFI	93.69	44	HOMEX	IND	89.50	82	LASEG	SFI	80.82
8	CULTIBA	PCF	93.43	45	ASUR	IND	89.22	83	CIDMEGA	CNB	80.22
9	MEXCHEM	MAT	93.25	46	BAFAR	PCF	89.09	84	GCARSO	IND	80.06
10	AEROMEX	IND	93.11	47	OHLMEX	IND	88.92	85	AHMSA	MAT	78.48
11	MAXCOM	TEL	93.09	48	GFINBUR	SFI	88.88	86	ELEKTRA	CNB	78.32
12	TMM	IND	93.00	49	ALSEA	CNB	88.78	87	AMX	TEL	78.20
13	GNP	SFI	93.00	50	TLEVISA	TEL	88.73	88	COMERCI	PCF	77.23
14	PE&OLES	MAT	92.97	51	HILASAL	CNB	88.66	89	LAB	SAL	77.17
15	GPH	CNB	92.90	52	GMEXICO	MAT	88.49	90	HOGAR	IND	76.22
16	CHDRAUI	PCF	92.78	53	VITRO	MAT	88.36	91	ARA	IND	76.14
17	GMD	IND	92.78	54	SORIANA	PCF	88.21	92	EDOARDO	CNB	75.55
18	AZTECA	TEL	92.66	55	ICA	IND	87.94	93	ARISTOS	IND	75.32
19	LAMOSA	MAT	92.60	56	FINDEP	SFI	87.77	94	GFAMSA	CNB	74.93
20	RCENTRO	TEL	92.53	57	SPORT	CNB	87.73	95	INVEX	SFI	74.40
21	HERDEZ	PCF	92.31	58	CMOCTEZ	MAT	87.54	96	GFNORTE	SFI	73.94
22	CEMEX	MAT	92.29	59	CMR	CNB	87.32	97	CIE	CNB	73.73
23	GPROFUT	SFI	92.23	60	BACHOCO	PCF	86.91	98	PROCORP	SFI	68.44
24	CYDSASA	MAT	92.11	61	VALUEGF	SFI	86.68	99	GMODELO	PCF	63.52
25	GIGANTE	PCF	92.06	62	GENSEG	SFI	86.55	100	FINAMEX	SFI	61.52
26	LIVEPOL	CNB	92.05	63	IDEAL	IND	86.53	101	INCARSO	IND	60.52
27	ALFA	CNB	91.92	64	AXTEL	TEL	86.19	102	KIMBER	PCF	59.50
28	MINSA	PCF	91.90	65	SIMEC	MAT	86.16	103	PINFRA	IND	57.94
29	ALPEK	MAT	91.76	66	ACCELSA	IND	86.02	104	COLLADO	MAT	57.46
30	KUO	IND	91.50	68	BEVIDES	SAL	85.61	105	GEO	IND	55.71
31	DINE	IND	91.29	69	GRUMA	PCF	85.44	106	REALTUR	CNB	52.92
32	MEGA	TEL	91.19	70	SANMEX	SFI	85.40	107	PASA	IND	52.90
33	WALMEX	PCF	91.18	71	CABLE	TEL	85.18	108	ACTINVR	SFI	50.18
34	AC	PCF	91.14	72	SARE	IND	84.97	109	GFMULTI	SFI	41.99
35	BOLSA	SFI	90.98	73	PAPPEL	MAT	84.79	110	SAB	SAL	39.82
36	OMA	IND	90.91	74	MASECA	PCF	84.73	111	QUMMA	TEL	39.53
37	CONVER	MAT	90.79	75	CREAL	SFI	84.48				

Sectors: Sectors: CNB - Non-Basic Consumption; IND - Industrial; MAT - Materials; PCF - Frequent Consumption Products; SAL.- Health; SFI.- Financial; TEL.- Telecommunications. Source: own elaboration

Table 5
OECD Integration of CG Best Practice Adherence Indicators

Management	*Transparency and monitoring*	*Board of Directors*
ADMEST	SEGAUD	CONADM
ADRISK	OIAAUD	CONSEJ
GESTED	PARREL	INTCON
	TRANSP	COTISU
	VIGILA	INDCON

Source: own elaboration

Conclusions

The original contribution of this article consists in the generation of the Global Indicator of Adherence to Best Corporate Governance Practices (ADHECORP), which measures the degree of adherence of Mexican Corporations to the recommendations of the Code of Best Corporate Practices (CMPC). ADHECORP is made up of 13 subindices or compound factors, systematically extracted through Exploratory Factorial Analysis (EFA), which groups the variables according to the correlation between the different variables derived from the questionnaire on adherence to the best corporate governance practices. The multivariate analysis techniques used in this study allow the generation of thirteen subscripts or compound factors that explain 73% of the statistical variability observed in compliance with the CMPC from 2010 to 2016.

The ADHECORP index in this study offers 13 dimensions of CG that encompass the individual dimensions previously researched in the literature. The proposal of this study contrasts with that of Briano and Rodríguez (2016), who assume equal weights for only four dimensions. Conversely, this proposal eliminates subjectivity in the selection of variables, as well as their weights. It also contrasts with the proposals of Gompers, Ishii, and Metrick (2003), and Cremers and Ferrel (2014) who seek to model specific dimensions of CG such as shareholder rights, or Sarkar *et al*. (2012) who obtain performance indicators from the board of directors, the ownership structure, or internal and external audits. It also contrasts with the specific search for indicators by Brown and Caylor (2006) on council attendance and whether the manifestation of guidelines is public (Pucheta-Martínez, 2015). Briano and Rodríguez (2016) focused on whether institutional factors determine the degree of CG compliance in the leading companies listed in emerging markets in Latin America. This study provides institutional indicators and several other dimensions of CG.

The subindices obtained, orthogonal to each other, make it possible to monitor the underlying behavior of individual and joint corporate governance of companies concerning adherence and compliance in the CMPC. One of the advantages of this proposal of indicators is the elimination of subjective criteria in the selection of variables to form individual indicators and also the elimination of subjectivity in the choice of weighting factors, since PCA and EFA group the variables in an orderly manner according to their statistical behavior. The above contrasts with proposed indicators in the literature that rely on subjective criteria to select and weight the variables that make up the indicators, e.g., Briano and Rodríguez (2016). At the same time, this proposal recognizes that there is no single CG model but instead describes CG as a diverse set of dimensions.

according to the good practices recommended by the CMPC. The strongest cases and companies with weak CG practices are detected. This study identifies particular cases of companies with unfavorable events in their compliance with the regulations issued by the BMV, which receive low scores using the indicators in this study. The subindices also allow for the following of stylized facts of corporate governance, such as those identified by the OECD (2004) concerning Management, Transparency, and Board of Directors Monitoring.

The study demonstrates the application of subindices of CG by economic sectors and also by companies. Additionally, it shows the usefulness of ADHECORP for monitoring the temporal variation of the essential characteristics of the degree of compliance with best practices.

The ADHECORP index is a country-specific indicator on a national scale. This prevents it from being implemented in other countries. Also, the annual frequency of the input data limits the timely reporting of the measurements. Some other challenges are the sensitivity of ADHECORP to changes in the questionnaires; and the possible omission of relevant information from instruments such as annual reports, individual corporate governance reports, press reports or other releases.

However, these restrictions do not invalidate the usefulness of the proposed indicators. In addition to monitoring and ranking the relative position of companies, composite indices make it possible to examine the degree of compliance, even of companies not listed on the Mexican stock market. This proposal allows for the evaluation of individual and joint characteristics of corporate governance, as well as to test hypotheses and theoretical relationships in this area in future studies. Future research using the ADHECORP index includes determining the degree of compliance with current CG precepts and the impact of financial (Gompers, Ishii, & Metrick, 2003), profit (Paz-Ares, 2004), financing (Durnev & Kim, 2003), and market value (Klapper & Love, 2002) variables, among others.

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