

THE PROBLEM OF CAUSALITY IN CORPORATE GOVERNANCE RESEARCH: THE CASE OF GOVERNANCE INDEXES AND FIRM VALUATION

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Abstract

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In recent years the problem of the determination of causality has become an increasingly important question in the field of corporate governance. This paper reviews contemporary literature on the topic of causality, specifically it examines the literature that investigates the causal relationship between corporate governance indexes and firm valuation and finds that the current approach is to attempt to determine causality empirically and that the problem remains unresolved. After explaining the reasons why it is not possible to attempt to determine causality using real world data without falling prey to a logical fallacy, this paper discusses a traditional approach used in science to deal with the problem. In particular, the paper argues that the appropriate approach for the problem is to build theories, with causality featuring as a part of those theories, and then to test those theories both for logical and empirical consistency.

Keywords: Corporate Governance, Causality, Agency Costs, Firm Valuation, Governance Indexes, Boards of Directors, Entrenchment, Shareholder Rights

1. INTRODUCTION

The practical goal that corporate governance scholars pursue when studying corporate governance questions is to aid both public and private decision makers to improve corporate governance. Evidently, to achieve this objective they first need to establish exactly what needs to be done in order to ameliorate the current state of affairs. Thus, scholars search for the *causes* that determine governance phenomena because decision makers need to enhance corporate governance and the gains in economic efficiency from this improvement are potentially very large. Recent corporate governance research, especially work that focuses on studying the relationship between indexes which measure the quality of corporate governance on the one hand and measures of firm valuation on the other, has consistently found a statistically significant negative⁹³ correlation between different measurements of these variables (Gompers, Ishii and Metrick, 2003; Bebchuk, Cohen and Ferrell, 2009; Chi and Lee, 2010; Bebchuk, Cohen and Wang, 2013; Cremers and Ferrell, 2014). Unfortunately, however,

as Bebchuk et al. (2013, p. 343) have recently observed, “these findings do not resolve the causality questions – which the literature has generally been unable to resolve – concerning the extent to which governance provisions directly cause or merely signal worse performance of the firms having them.” Since the potential gains in economic efficiency that could be derived from settling this issue may well be enormous it is clear that more work needs to be done in this area⁹⁴.

In view of this situation, the contribution of this paper consists in drawing attention to a traditional approach used in science to deal with the problem of causality. The argument is based on the distinction between the “real world” and the “world of theory.” After explaining the reasons why it is not possible to attempt to determine causality using real world data without falling prey to a logical fallacy, this paper argues that the appropriate approach to the problem is to first build theories, with causality featuring as a part of those theories, and then to test

⁹³ Corporate governance indexes are constructed in such a way that a higher score indicates more restrictions on shareholder rights or a larger number of anti-takeover provisions.

⁹⁴ “We consider several explanations for the results, but the data do not allow strong conclusions about causality ... These multiple causal explanations have starkly different policy implications and stand as a challenge for future research. The empirical evidence of this paper establishes the high stakes of this challenge. If an 11.4 percentage point difference in firm value were even partially “caused” by each additional governance provision, then the long-run benefits of eliminating multiple provisions would be enormous” (Gompers, Ishii and Metrick, 2003).

those theories both for logical and empirical consistency. The theory that survives the tests and is preferred by scientists resolves the causality question temporarily until it is replaced by a better theory (cf. Dubin, 1978, pp. 12-14).

In this paper, we will limit our analysis to scholarly articles that use indexes of corporate governance provisions⁹⁵ and that study the relationship of such indexes with firm valuation for two reasons. First, according to the authors of these studies, the solution of the problem of causality would likely allow decision makers to adopt appropriate policies and thereby secure important economic efficiencies. And second, because in this body of research the answer to important corporate governance questions seems closer to hand as these articles have been generally consistent in finding similar empirical results. This can be contrasted with other types of corporate governance research for which the empirical findings have been notably inconsistent⁹⁶. Although for brevity we do not consider these other kinds of studies explicitly in this paper, the argument on how to deal with causality discussed below is also applicable to their respective cases.

Moreover, to further delimit the subject matter of this paper we call attention to the fact that causality properly understood is not equivalent to simultaneity/endogeneity, and that therefore it is not possible to deal with the problem of causality using simultaneous equation methods. The classic definition of causality, which we use to guide our discussion in this paper, is: the relation between two variables or events that occur *in a particular sequence*, where the second event is the consequence of the first i.e. a sequential, one-way cause and effect relationship. On the other hand, simultaneity or co-determination is usually defined as a two-way flow of influence between variables that occurs *at the same time*. Thus, causality and simultaneity are different concepts. As is well known, simultaneous equation methods are used to deal with the latter concept, and not with the former, when there are theoretical reasons to believe that two or more variables affect each other simultaneously. In addition, note that the two concepts are incompatible and can be viewed as rivals, as it has transpired that influential theorists have endeavoured to substitute one concept for the other in key areas of economic and financial theory⁹⁷. Hence, from the start, it is evident that it is incorrect to believe that the problem of causality (in its classical sense) can be dealt with using simultaneous equation methods, and for this reason, we do not review papers that claim to resolve

causality questions through the use of such methods.

The remainder of this paper is organized as follows: Section 2 reviews the problems with the current approach to deal with the issue of causality in some relevant corporate governance studies and argues that it is inadequate to resolve the causality question. Section 3 then discusses the proposed approach to the problem of causality. Section 4 concludes.

2. CAN CAUSALITY BE ESTABLISHED USING REAL WORLD DATA?

In this section, we consider the issue concerning whether causality can be established through empirical work. After reviewing the empirical literature that examines the direction of causality between governance indexes and firm valuation in section 2.1, we conclude in section 2.2 that causality cannot be established using real world data.

2.1. The Debate on the Direction of Causality

The debate on the direction of causality between indexes of corporate governance provisions and firm valuation starts with the seminal paper by Gompers et al. (2003). These authors construct for the first time a very useful governance index of corporate governance provisions, which they call “G”, which has been often used in corporate governance studies ever since⁹⁸. In this work, Gompers et al. maintain that available theory provides them with no clear prediction on the relationship between governance provisions and firm valuation. They recognize that governance provisions give more power to the management *vis-à-vis* the shareholders. However, they argue that if management uses this power judiciously it can benefit shareholders, while on the other hand if management uses this power for their own benefit then governance provisions would hurt shareholders. They conclude that from a theoretical perspective there is no obvious answer to this issue and that therefore in their paper they ask an empirical question. After conducting their empirical tests, they find a negative correlation between G and firm valuation as measured by Tobin’s Q⁹⁹. Importantly, however, they argue that their data does not allow them to reach a conclusion about causality, that is, whether high G scores cause low Tobin’s Qs or vice versa.

Following the results in Gompers *et al.* (2003), one of the first papers that presents an empirical test that aims to shed some light on the direction of causality between a governance index and firm valuation is by Bebchuk et al. (2009)¹⁰⁰. One key contribution of Bebchuk et al. is the creation of a more refined governance index which is based solely on those governance provisions which entrench

⁹⁵ In particular, we will concentrate in a literature that employs two well-known indexes: the “G-index” created by Gompers *et al.* (2003) and the “E-index” developed by Bebchuk *et al.* (2009).

⁹⁶ In particular, see the opposing results in the literature that examines ownership structure and its relation to firm performance (Demsetz and Lehn, 1985; Morck, Shleifer and Vishny, 1988; Hermalin and Weisbach, 1991; Himmelberg, Hubbard and Palia, 1999; Coles, Lemmon and Meschke, 2012) or the conflicting results in the literature that studies the size and composition of the board of directors and its effect on performance (Baysinger and Butler, 1985; Fosberg, 1989; Rosenstein and Wyatt, 1990; Bhagat and Black, 2002; Duchin, Matsusaka and Ozbas, 2010). For an in-depth analysis of the reasons behind the mixed results in the corporate governance literature see Saravia (2015).

⁹⁷ See, for instance, Stigler (1946, p. 181) who criticizes Eugen von Böhm-Bawerk for rejecting the concept of simultaneity and preferring the concept of causality for theoretical work. Note that at the time of Stigler’s writings his position, i.e. spurning causality, was the popular one among philosophers of science. Ironically, some three decades later the concept of causality was once again regarded as fundamental to science by most philosophers of science (Stewart, 1979, pp. 65-66).

⁹⁸ The G index is an equally weighted index of 24 corporate governance provisions that restrict shareholder rights and increase managerial power (e.g. poison pills, classified boards, golden parachutes, etc.). The index is constructed by adding one point for every provision that a firm has adopted at a particular point in time. This index ranges from 0 to 24 and a higher score indicates more restrictions on shareholder rights.

⁹⁹ More precisely, industry-adjusted Tobin’s Q. All empirical papers quoted below use industry-adjusted Tobin’s Q as a measure of firm valuation. Lehn *et al.* 2007 use the market to book ratio of assets, but this is calculated in the same way as Tobin’s Q is computed in the other papers.

¹⁰⁰ Note that the discussion paper version of Bebchuk *et al.*’s article, which already featured this empirical test, appeared in 2004.

management, which they call the “entrenchment index” or “E index”. Similarly to Gompers *et al.*, they also find a negative correlation between their governance index and firm valuation, and likewise they realize that “a finding of correlation... is subject to different possible interpretations” and that “our results... do not enable choosing among these interpretations” (p. 786). Thus, to see if it is possible to decide between the several interpretations, they present an empirical test of causation which consists in examining whether a firm’s E index in 1990 had a negative correlation with Tobin’s Q in the 1998-2002 period. After conducting this test they do find a negative correlation between entrenchment and firm value, however, they prudently conclude that the test does not establish the direction of causation. At best, their test shows that the evidence is not inconsistent with causality running from entrenchment to valuation.

On the other hand, not all papers in the literature are as cautious in their conclusions as Bebchuk *et al.* (2009). For instance, much stronger claims are made in the paper by Lehn *et al.* (2007) regarding the prospect of determining the direction of causality through the statistical examination of real world data. Among other things, these authors claim that their findings of (a) a significant correlation between firm valuation measures during 1980-1985 and both the G and the E indexes during the 1990s, and (b) a negative correlation between both the G and the E indexes and lagged measures of firm valuation but no correlation between the indexes and subsequent measures of firm valuation¹⁰¹, show that causality runs from firm valuation to governance indexes and not vice-versa. As we discuss below, such strong conclusions do not follow *necessarily* from the premises in their arguments.

In an interesting article, Chi and Lee (2010) hypothesize that the relationship between the E and G indexes (as well as other governance mechanisms) and firm valuation is a function of potential agency conflicts which they proxy using free cash flow. Thus, while on the one hand, they find that among firms with high free cash flow Tobin’s Q is higher for firms with fewer governance provisions, on the other, they find that among firms with low free cash flow the relation between governance indexes and firm valuation is less strong or insignificant. Moreover, based on the work of nineteenth-century philosopher and political economist John Stuart Mill they attempt to tackle the problem of causality by observing that:

According to Mill ..., one can conclude that the cause causes the effect if (1) the cause precedes the effect, (2) the cause is related to the effect, and (3) there is no other explanation other than the cause. We address the first two criteria by lagging the governance variables with respect to Q and by documenting the significant statistical and economic relation between the governance variables and Q.

¹⁰¹ The statistical results presented in Lehn *et al.* (2007) suggest that this assertion is not fully accurate; there are several instances in which a governance index is also significantly correlated to subsequent measures of firm valuation. Additionally, the authors assert that the correlation between firm valuation and contemporaneous values of the governance indexes vanishes after controlling for valuation in 1980-1985, however, their Table 1 on p. 912 shows that the mean coefficient on the G index is still significant at the 1% level after controlling for valuation in 1980-1985.

The third criterion presents a tremendous impediment to most governance studies (Chi and Lee, 2010, p. 357).

After performing this test, the authors conclude that causality likely runs from the governance indexes and other governance mechanisms to firm valuation and not vice-versa. However, they also correctly point out that they cannot rule out the possibility that there may be other factors driving the results.

Finally, in a recent article, Cremers and Ferrell (2014) find a significant negative correlation between year-end firm valuation and lagged G-index for the 1978-2006 period. Importantly, the authors also find that the significant negative correlation only occurs after 1985 when the Delaware Supreme Court backed the adoption of antitakeover provisions by U.S. boards of directors in the momentous case of *Moran v. Household*. From these results, they conclude that the evidence is consistent with causation running from governance indexes to firm valuation. On the other hand, they investigate whether causality runs from firm valuation to governance indexes as argued by Lehn *et al.* (2007). Specifically, they examine whether lagged Tobin’s Q is a good predictor of future changes in G or the decision to implement or remove a poison pill. Their results suggest that a low Tobin’s Q is not a very good predictor of increases in the G-index and only a modestly good predictor of the adoption of a poison pill. Hence, they conclude that the proposition that causality runs from valuation to governance is not supported by the data (p. 1193). Nevertheless, they do recognize that their results do not “prove that causation necessarily runs from governance to firm value given the possibility of changes in unobserved firm characteristics driving the association” (p. 1194).

In sum, after reviewing several important attempts to determine the direction of causality through empirical tests, it is apparent that the literature has not been able to resolve, or reach consensus on, the problem of causality regarding the correlation between governance indexes and firm valuation. While some papers find that causality likely runs from governance to firm valuation, others find that it runs in the opposite direction.

2.2. Evaluation of the Empirical Literature on Causation

To conduct our evaluation of the empirical literature on causation above, we need first to revisit the definition of a “fallacy” in the sense given to the term by the logicians. A fallacy is simply an “argument in which the premises do not lead *necessarily* to the stated conclusion”. Note that this does not mean that a fallacious argument is necessarily wrong, rather it means that the fallacious argument is not necessarily right (Stewart, 1979, p. 20, emphasis in the original). With this definition in mind, our argument in this section is that *the empirical tests* that aim to determine the direction of causality discussed above implicitly rest on the fallacy known as *post hoc ergo propter hoc* or “after this, therefore because of this.” This fallacy consists in “*assuming that because event B happens after*

event A, then event B is necessarily caused by event A" (Stewart, 1979, p. 24, emphasis in the original).

Thus, if a piece of research claimed that since low valuation precedes high scores in governance indexes (or vice versa) this reflects that the former necessarily causes the latter, then this research would be falling prey to the *post hoc* fallacy. Now, the fact that the causality tests discussed above implicitly rest on an argument in which the premises do not lead necessarily to the stated conclusion is clearly recognized in the literature, and this has prevented researchers from fully falling into the trap of the *post hoc* fallacy. For instance, Lehn et al. (2007, p. 908, n.1) state in a footnote that "the test cannot rule out the possibility that a third variable affects both valuation multiples and governance indices." However, awareness of this circumstance has not deterred some of the authors using such empirical tests from making strong claims about the direction of causality, and it has not prevented most researchers from using empirical tests based on such a fallacy in an attempt to determine the direction of causality.

Furthermore, while some of the papers reviewed assume that the cause will precede the effect, it is important to highlight that it is not impossible that the effect could precede the cause, especially when considering the phenomena of the sciences that deal with human actors. For instance, Joseph P. McKenna has proposed the following interesting proposition which is clearly absurd and is designed to disprove the assertion that the cause will always precede the effect: "In the Western economies, there is typically a large upsurge in the amount of currency in circulation in the few weeks before Christmas. Therefore, the occurrence of Christmas is caused by the rise in currency circulation" (McKenna, quoted in Stewart, 1979, p. 201).

In sum, based on the insight that the basis for the empirical tests of causality reviewed above is fallacious, we conclude that such tests are not adequate to resolve the problem of causality and that this problem will become a persistent feature of the corporate governance literature unless a different approach is adopted.

3. HOW TO DEAL WITH THE PROBLEM OF CAUSALITY

Having argued that the current methods used in the literature to deal with the problem of causality are inadequate, in this section we concentrate on the main contribution of this paper, which consists of drawing attention to a traditional approach used in science to deal with the problem of causality. To understand our proposed method, it is important to remember in the first place that causality belongs in the "conceptual domain", that is, it exists in the theoretical world as opposed to the empirical world (Stewart, 1979, p. 73). As argued by Stewart (1979, p. 65) in the real world "a cause can never be observed." We may observe that on every occasion that a specific kind of event occurs it is followed by another definite type of event, but that is all we can perceive through our senses. If after observing the two events we "introduce the notion of 'cause', it can only be because we have done so out of our own heads." Hence, if we attempt to discover causality through observation of the phenomena of the real

world we would be looking in the wrong place. What we need to do is to try to determine causality in the theoretical world which, as Dubin (1978, p. 5) and other theory-building authorities explain, exists only in the human mind.

Now, since both theory and causality only exist in the scientists' heads, it follows that the appropriate way to deal with the problem of causality is to build theories with causality appearing as a feature of such theories (*cf.* Stewart, 1979, pp. 65-69). In this regard, it is important to notice that in contrast to the empirical world, causality can be established in the world of theory. This is because in the mental world of theory only those variables that the theorist postulates, and only the relationships between such variables that the theorist assumes, are present. Having a precise number of variables and relationships between the variables to work with the theorist is in a position to establish by deduction that one event will *necessarily* cause another. In contrast to the real world, in the world of theory, there are no potentially unknown variables, unrecognized additional factors, or unidentified relationship between variables that may drive the results. Once the theories are built, researchers can then try to disprove the different theoretical models using both empirical tests and assessments concerning the logical consistency of the theories. The theory that survives the tests and is preferred by scientists resolves the causality question temporarily until it is replaced by a better theory. Having said this, notice that by the term "theory" we do not mean what Sparrowe and Mayer (2011) have referred to as "fragmented theorizing" or "argument by citation" whereby each "testable proposition" or "hypothesis"¹⁰² is taken from different and often mutually incompatible arguments. Clearly, such a procedure would not yield a coherent causal explanation and furthermore it might create the impression that "the authors are engaging in post hoc theorizing, casting about in the literature for a theory that seems to fit a given hypothesis or, worse still, one that matches the variables on which they already gathered data" (Sparrowe and Mayer, 2011, p. 1101).

Moreover, by theory, we do not exactly mean just a "well-informed conjecture". More precisely, by theory we refer to the result of a process that starts by stating assumptions about human behaviour, technology, institutions and resources which are reasonably self-evident, followed by the use logic to deduce not so obvious or even controversial conclusions or hypotheses about economic and financial phenomena¹⁰³. Importantly, such hypotheses can be rejected not only through empirical tests but also if it can be shown that the logic used in their derivation is faulty. That is, if the conclusions or hypotheses do not follow from the

¹⁰² According to theory-building experts (e.g. Dubin, 1978) the difference between a testable proposition and a hypothesis is that while the former consists of concepts and exists only in the human mind, the latter is derived from a proposition by substituting empirical proxies for the concepts in the proposition and consequently belongs in the empirical world. For the sake of expediency and to keep our terminology consistent with most of the corporate governance literature, in the following discussion we use the word "hypothesis" to refer to both concepts. Strictly speaking, however, a proposition can only be tested directly using reason, and a hypothesis can be tested directly through empirical tests only.

¹⁰³ Research by Saravia and Saravia-Matus (2016) is an example of recent work that follows this criterion. This work presents a theory which takes as its starting point the assumptions of Transaction Cost Economics (see e.g. Williamson, 2010), and yields a causal explanations and testable propositions concerning the relationship between governance mechanisms (corporate governance provisions in particular) and firm valuation.

assumptions, they can be rejected even before the empirical tests are carried out. On the other hand, the empirical tests are useful to detect if something is missing in the theory or if there may be errors in the chains of logical deduction. If there is intersubjective agreement among scientists that the hypotheses of the theory are not consistent with the empirical facts, then it is likely there is something wrong with the theory.

To return to the issue of causality in corporate governance studies, it is important to remember the one advantage that economics and finance have over physical science. While the latter deals with unmotivated particles of matter and for this reason the determination of causality can be conceptually challenging, in the former it stands to reason that the ultimate cause of all phenomena in society and the markets can be found in the activities of individuals who act according to their preferences. That is, in economics and finance causality runs from preferences to actions to economic and financial phenomena (Rothbard, 1993). If this notion is accepted, then it is not sensible to argue that one phenomenon (firm valuation) causes another phenomenon (governance indexes levels) or vice-versa. What is needed instead is a theory that predicts how individuals will act, based on assumed preferences (behavioural assumptions), in the face of certain institutional, technological and resource conditions. The actions of the individuals determine both firm valuation and the height of corporate governance indexes.

Moreover, if it is accepted that economic and financial phenomena are determined by the actions of the individuals, then it is possible to reject some theories in the field of corporate governance even before carrying out the empirical tests. For instance, notice that corporate governance studies originated from a general dissatisfaction with the assumption that corporations maximize wealth (or profits). Clearly, corporations are not individuals; such entities have no preferences and do not act. Rather, individuals are the ones who act in the name of corporations. Thus, if a theory starts by assuming that corporations maximize wealth and that corporations arrange corporate governance mechanisms in such a way that permits the attainment of this goal, then this theory would be assuming away one of the main problems in (and the main motivation of) the field of corporate governance. Moreover, the theory would not be consistent with the view that the relevant phenomenon is determined by the actions of market participants. Individuals who act in the name of the corporations, even if they have a very large ownership stake, maximize utility not wealth. They maximize utility (*ex-ante*) by preferring marginal units of certain goods and setting others aside according to their preferences and after taking proper account of the constraints facing them. Wealth is just one of these goods. Thus, it is clear that such individuals face a trade-off between wealth and other goods as is shown by Jensen and Meckling (1976). In sum, the claim that corporations maximize wealth should figure as a conclusion or hypothesis in a theory of corporate governance, not as an assumption. This hypothesis would then be subject to logical and empirical tests.

4. CONCLUSION

Public and private decision makers need and are interested in research that resolves the issue of causality and not in work that simply establishes correlations between variables. After reviewing the current empirical literature on the causal relationship between corporate governance and firm valuation, this paper has explained the reasons why it is not possible to attempt to determine causality using real world data without falling prey to the *post hoc ergo propter hoc* fallacy¹⁰⁴. Hence, this paper proposes that the appropriate approach to address the problem of causality in corporate governance research is to build theories, with causality featuring as a part of those theories, and then to test those theories both for logical and empirical consistency.

Now, it may be argued that the traditional method advocated in this paper is the one that is actually followed in corporate governance research already. However, our review of the literature in section 2 suggests otherwise, in particular regarding the case of the relationship between governance indexes and firm valuation. Clearly, the intention of the articles we have reviewed is to try to determine causality directly through the use of empirical methods, as opposed to constructing fully developed theories and reaching conclusions about causality based on those theories. We have argued that this is the reason why several authors find that the problem of causality remains unresolved. In view of this situation, we consider that the clarifications we provide in this paper are important and necessary at this point in time in order to ensure future progress in our field of study.

Lastly, this paper constitutes a reminder on the limits of empirical research and an appeal to re-establish a better balance between theory and empirical work. While there are certain tasks that can be best achieved through empirical work, there are other tasks, such as the determination of causality, which can be accomplished primarily through theoretical research. Both kinds of research are complementary and better awareness of their strengths and weaknesses will improve the quality and usefulness of corporate governance studies.

REFERENCES

1. Baysinger, B. D., & Butler, H. N. (1985). Corporate governance and the board of directors: Performance effects of changes in board composition. *Journal of Law, Economics & Organization*, 1(1), 101-124.
2. Bhagat, S., & Black, B. (2002). The non-correlation between board independence and long-term firm performance. *Journal of Corporation Law*, 27, 231-273. <http://doi.org/10.2139/ssrn.133808>
3. Bebchuk, L., Cohen, A., & Ferrell, A. (2009). What matters in corporate governance? *The Review of Financial Studies*, 22(2), 783-827. <https://doi.org/10.1093/rfs/hhn099>
4. Bebchuk, L. A., Cohen, A., & Wang, C. C. Y. (2013). Learning and the disappearing association

¹⁰⁴ Strictly speaking it is not possible to determine causality empirically no matter what empirical methods are used. Contrary to what some appear to believe not even randomized experiments and other controlled experiments can establish that one event *necessarily* causes another in the empirical world (Worrall, 2007). This is because in the empirical world one can never completely rule out the possibility that a third factor may be driving the results. Moreover, causes are not observable, causes only exist in the scientists' minds (Stewart, 1979, p. 65). Let us remember that the problem of causality originated in considering phenomena of the physical and other natural sciences where a level of precision in empirical testing is possible which we cannot hope to match in the social sciences. If in these fields of knowledge it is still not possible to determine causality empirically it is not because of problems in performing better empirical tests.

- between governance and returns. *Journal of Financial Economics*, 108(2), 323-348. <https://doi.org/10.1016/j.jfineco.2012.10.004>
5. Chi, J. D., & Lee, D. S. (2010). The conditional nature of the value of corporate governance. *Journal of Banking & Finance*, 34(2), 350-361. <https://doi.org/10.1016/j.jbankfin.2009.08.001>
 6. Coles, J. L., Lemmon, M. L., & Meschke, J. F. (2012). Structural models and endogeneity in corporate finance: The link between managerial ownership and corporate performance. *Journal of Financial Economics*, 103(1), 149-168. <https://doi.org/10.1016/j.jfineco.2011.04.002>
 7. Cremers, M., & Ferrell, A. (2014). Thirty years of shareholder rights and firm value. *The Journal of Finance*, 69(3), 1167-1196. <https://doi.org/10.1111/jofi.12138>
 8. Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *Journal of Political Economy*, 93(6), 1155-1177. <https://doi.org/10.1086/261354>
 9. Dubin, R. (1978). *Theory building*. New York: Free Press.
 10. Duchin, R., Matsusaka, J. G., & Ozbas, O. (2010). When are outside directors effective? *Journal of Financial Economics*, 96(2), 195-214. <https://doi.org/10.1016/j.jfineco.2009.12.004>
 11. Fosberg, R. H. (1989). Outside directors and managerial monitoring. *Akron Business and Economic Review*, 20(2), 24-32.
 12. Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics*, 118(1), 107-156. <https://doi.org/10.1162/00335530360535162>
 13. Hermalin, B. E., & Weisbach, M. (1991). The effects of board composition and direct incentives on firm performance. *Financial Management*, 20(4), 101-112. <https://doi.org/10.2307/3665716>
 14. Himmelberg, C. P., Hubbard, R. G., & Palia, D. (1999). Understanding the determinants of managerial ownership and the link between ownership and performance. *Journal of Financial Economics*, 53(3), 353-384. [https://doi.org/10.1016/S0304-405X\(99\)00025-2](https://doi.org/10.1016/S0304-405X(99)00025-2)
 15. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
 16. Lehn, K., Patro, S., & Zhao, M. (2007). Governance indexes and valuation: Which causes which? *Journal of Corporate Finance*, 13(5), 907-928. <https://doi.org/10.1016/j.jcorpfin.2007.07.002>
 17. Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics*, 20, 293-315. [https://doi.org/10.1016/0304-405X\(88\)90048-7](https://doi.org/10.1016/0304-405X(88)90048-7)
 18. Rosenstein, S., & Wyatt, J. G. (1990). Outside directors, board independence, and shareholder wealth. *Journal of Financial Economics*, 26(2), 175-191. [https://doi.org/10.1016/0304-405X\(90\)90002-H](https://doi.org/10.1016/0304-405X(90)90002-H)
 19. Rothbard, M. N. (1993). *Man, economy and state: A treatise on economic principles*. Auburn, Ala.: Ludwig von Mises Institute.
 20. Saravia, J. A. (2015). Why has the literature on corporate governance and firm performance yielded mixed results? *Corporate Ownership & Control*, 13(1-1), 152-163. <https://doi.org/10.22495/cocv13i1c1p2>
 21. Saravia, J. A., & Saravia-Matus, S. (2016). Corporate governance and transaction cost economics: A Study of the equity governance structure. *Corporate Board: role, duties & composition*, 12(1), 33-44. <https://doi.org/10.22495/cbv12i1art4>
 22. Sparrowe, R. T., & Mayer, K. J. (2011). Grounding hypotheses. *Academy of Management Journal*, 54(6), 1098-1102. <https://doi.org/10.5465/amj.2011.4001>
 23. Stewart, I. M. T. (1979). *Reasoning and method in economics*. London: McGraw-Hill.
 24. Stigler, G. J. (1946). *Production and distribution theories*. New York: Macmillan & Co.
 25. Williamson, O. E. (2010). Transaction cost economics: The natural progression. *American Economic Review*, 100(3), 673-690. <https://doi.org/10.1257/aer.100.3.673>
 26. Worrall, J. (2007). Why there's no cause to randomize. *The British Journal for the Philosophy of Science*, 58(3), 451-488. <https://doi.org/10.1093/bjps/axm024>