Board Diversity, Risk Management and Efficiency Evaluation: Evidence from European Listed Manufacturing Companies

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1   INTRODUCTION

The purpose of this study is to focus on the board diversity–performance relationship (Loden and Rosener 1991; Van den Berghe and Levrau 2004; Kiel and Nicholson 2003; Rose 2007a; Dahya and McConnell 2007), highlighting how the presence of women (Shrader et al. 1997; Carter et al. 2003; Adams and Ferreira 2009) and foreigners on boards (Ujunwa 2012; Peng et al. 2003) influences corporate performance, in terms of profitability efficiency (Luo 2003). Performance and risk management have a meaningful and positive relationship (Jafari et al. 2011).

Board diversity represents a significant corporate governance mechanism in order to achieve efficient management and monitoring within companies (Boone et al. 2007). As the EU Commission indicates, the

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diversity issue is of great importance in increasing the monitoring quality of both management and board.

Van der Walt and Ingley (2003) describe diversity in corporate governance as the composition of the board and combination of the different qualities, characteristics and expertise of individual members related to board decision-making and other processes.

This topic is of significance regarding normative perspectives—in fact some countries have recently enacted guidelines and/or mandatory regulation in order to increase women's presence on the boards of listed companies, i.e., gender quotas. But it is also of significance concerning managerial perspectives, i.e., gender and national diversity, which affect the decision-making process, improve economic results, increase media visibility and demonstrate commitment to social and ethical issues.

Theories like the *Agency Theory*, the *Stakeholders Theory* and the *Resource Dependency Theory* provide a comprehensive understanding of the connection between corporate governance, board diversity and corporate performance.

These include the relevance of a virtuous relationship with stakeholders, as proposed by both *Stakeholder Theory* (Donaldson and Davis 1991) and *Resource Dependence Theory* (Pfeffer and Salancik 2003).

The *Agency Theory* (Jensen and Meckling 1976) advocates that diversity is a main requirement for a fair and transparent decision-making process when measuring independence (Luoma and Goodstein 1999).

However, despite the extensive scope of studies, no consolidated theoretical framework has been made, nor has there been conclusive empirical evidence regarding how (or if) certain board features, concerning gender and national diversity, influence corporate performance.

The main purpose of this article is to provide new evidence about the relationship between board diversity and corporate performance.

Our sample covers the analysis of 451 European listed manufacturing companies for the year 2015. Unlike previous empirical studies, we have used the profitability efficiency as a measure of corporate performance.

In order to evaluate the profitability efficiency measurement, we have designed a set of scores, using the Data Envelopment Analysis (DEA) (Farrell 1957; Charnes et al. 1978; Färe and Lovell 1978) in a non-oriented Slack Based Measure—SBM model (Tone 2001).

A data logistic regression analysis (Logit) (Bajary et al. 2009; Vani 2001) was used to check whether there was a relationship between profitability efficiency scores and diversity management variables. We tested

the effect on corporate performance of the mandatory presence of women on boards, introduced by some European governments.

We took the *Critical Mass Theory* into account as an additional confounding factor.

To the best of our knowledge, this is the first combined application of a non-oriented SMB DEA model and logistic regression in order to evaluate the impact of diversity management on performance.

This paper is structured as follows: firstly, the theoretical background, then an explanation of data and methodology, results, and finally discussion and conclusions.

2   THEORETICAL BACKGROUND

The connection between virtuous governance, board diversity and performance is covered extensively in literature (Adams and Ferreira 2009; Campbell and Mìnguez-Vera 2008; Gallego-Alvarez et al. 2010; Jackling and Johl 2009; Post and Byron 2015; Siciliano 1996).

Carter et al. (2003), however, found that dominant theories on corporate governance do not provide a solid or complete explanation of any significant impact of diversity on performance. In fact, Kiel and Nicholson (2003) suggest that, due to the multi-disciplinary nature of the topic, no single theory can provide a complete framework for the relationship between diversity and performance. Based on these findings, we have designed a multi-theoretical framework that incorporates insights from agency, stakeholder and resource-dependence theories.

Table 1 gives a brief description of the main theories of board diversity effects and performance expectations.

It is worthy of mention that board governance diversity led researchers to consider the connection between the level of diversity and a firm's economic results (Carter et al. 2010). This relationship between increased diversity and firm performance has gained wide acceptance in recent literature, and in fact, many previous empirical studies have attempted to test whether greater diversity on boards has a positive impact on a company's performance or value.

This literature maintains that heterogeneous groups conceive higher quality decisions (Robinson and Dechant 1997), create additional innovative solutions through cognitive conflict (Chen et al. 2005) and influence a firm's strategy (Miller and Triana 2009).

Table 1 The multi-theoretical framework

Theory	Brief description	Board diversity approach	Performance expectations	Authors
Agency theory	The interests of the owner and the manager are divergent. The manager has information that the owner doesn't have, which can create information asymmetry	A more heterogeneous board improves control because a wider range of views increases board independence. Diversity on the board can be a mechanism to reduce costs associated with agency problems	Profit is the main performance objective for the owner. Agency problems hinder the owner from achieving company objectives. Monitoring and incentive alignment are necessary to mitigate agency problems for the owner to achieve desired performance	Alchian and Demsetz (1972), Jensen and Meckling (1976), Fama and Jensen (1983), Jensen (1983), Mallin (2004), Clarke (2007), Tosi (2008), Hillman and Dalziel (2003)
Stakeholder theory	The manager is simultaneously seen as an agent of multiple stakeholders, instead of shareholders alone	Diversity can be understood as an important indicator of a firm's corporate social responsibility and a sign of a stakeholder-oriented firm. Greater diversity on the board allows more open government processes that ensure the incorporation of stakeholder interests	Managers need to reach a trade-off between the various interests of different stakeholders. Maximising profit is not the only corporate objective	Hill and Jones (1992), Näsi (1995), Carroll (1996), Clarkson (1998), Macey (1998), Jensen (2000), Freeman et al. (2010), Ibrahim and Angelidis (1994), Oakley (2000), Hillman et al. 2002
Resource dependency theory	The focus is on the relationship between ownership, management and company's environmental dimension, shifting attention to the outside	Diversity improves the quality of board decisions, contributing to enhancing the firm's decision-making capabilities. Problem solving empower creativity and innovation. Business performance benefits from different perspectives and experiences	Board members establishing external links increase critical resourcing, which leads to better performance	Gabrielsson and Huse (2004), Siciliano (1996), Voordeckers et al. (2007)

In fact, prior research (Perryman et al. 2016; Bear et al. 2010; Campbell and Minguez-Vera 2008; Smith et al. 2006; Bonn et al. 2004; Carter et al. 2003; Erhardt et al. 2003; Adler 2001) suggests that increasing numbers of women on boards are keen to improve their companies' economic results. On the other hand, there is another research stream that finds a negative relationship between the number of female corporate board members and a firm's performance (Akpan and Amran 2014; Darmadi 2013; Carter et al. 2010; Adams and Ferreira 2009; De Andres et al. 2005; Pelled et al. 1999; Shrader et al. 1997), while some research even found no relationship between the two variables (Rose 2007b; Randøy et al. 2006; Zahra and Stanton 1988).

Recently, the European debate on gender equality and promoting measures has focused on the role of introducing gender quotas that may break the glass ceiling—i.e., obstacles that women face to get top positions in business. According to the latest data published by the European Commission in January 2015, the average number of women on the largest listed company boards in Europe is about 20.2%. Compared to 2010—when the same figure was 11.9%—the increase is significant. Differences between countries are nevertheless very marked: in France, Finland and Sweden it exceeds 25%, whereas in countries such as Ireland or Portugal women do not reach 10% of total directors. The only country, albeit outside the EU, which comes to 40% is Norway, a pioneer in introducing gender quotas, followed, recently, by Italy. The increase recently observed in Europe, however, is due to enhancements focused in countries where a mandatory gender regulation has been introduced.

However, in addition to the effect of mandatory gender regulation, a confound investigation factor arises from *Critical Mass Theory* (Konrad et al. 2008). This theory suggests that when a certain threshold is reached (a critical mass), the impact of a subgroup (such as "women on the board") becomes more noticeable (Kramer et al. 2006). Kramer et al. (2006) argue that "a board with three or more women is more likely to experience the positive effects and contributions to good governance than a board with fewer women". According to Kanter (1977), having only one member of a demographic group can lead to tokenism. Tokens are considered to represent an entire demographic group (women) and are seen by the dominant group (men) as a stereotype. Based on critical mass, research into the relationship between female directors and performance might require a distinction between boards with one woman and boards that have reached a certain threshold. This

standardization counteracts the "tokenism phenomena", which implies that companies only include a few female board positions in order to satisfy external expectations (Torchia et al. 2011).

An additional diversity variable is the international board composition (national diversity). This variable is rarely investigated, and Heidrick and Struggles (2014) show that the percentage of foreigners on boards in Europe increased from 11 to 23% between 2007 and 2009. Empirical research demonstrates that national diversity is expected to gain importance due to globalizing tendencies. An increasing number of empirical research studies (Ujunwa et al. 2012; Ujunwa 2012; Rose 2007c; Randøy et al. 2006; Oxelheim and Randøy 2003; Peng et al. 2003) measure the positive influence of foreigners on boards and companies' performance. Oxelheim and Randøy (2003) only observe foreigners who are originally from the US, Canada or UK due to the planned adaption of the Anglo-American corporate governance system.

Darmadi (2011) examines the association between board membership diversity and financial performance on firms listed on the Indonesia Stock Exchange (IDX) finding that nationality diversity has no influence on firms' performance. Kim and Lim (2010) even report that foreigners on boards can have a negative impact.

Using the theoretical framework mentioned above, we have tested whether board gender and national diversity are linked to positive profitability efficiency results. These are the research questions:

RQ1 Are increased numbers of women on company boards in countries adopting a mandatory legislative framework positively related to higher profitability efficiency results?
RQ2 Are increased numbers of foreigners on company boards positively related to higher profitability efficiency results?

3   DATA AND METHODOLOGY

3.1   *Data*

The sample design is of 451 manufacturing listed companies from six European countries (France, Germany, Italy, Spain, Portugal and United Kingdom), selected for the year 2015. Information about financial data and board diversity variables was obtained from the AIDA database, publicly available corporate governance reports and financial statements.

Table 2 Data description

Country	Companies (n)	Directors (n)	Women directors (n)	Foreign directors (n)	Total women directors (%)	Total foreign directors (%)
France	77	659	172	57	26.10	8.65
Germany	92	913	154	94	16.87	10.30
Italy	69	545	116	25	21.28	4.59
Portugal	5	55	11	14	20.00	25.45
Spain	27	401	38	6	9.48	1.50
United Kingdom	181	2200	355	366	16.14	16.64

Companies presenting outlier variables were removed. Table 2 shows countries companies number and data about board composition.

In order to detect the mandatory gender regulation effect, we analyzed countries adopting a mandatory legislative regulation (France, Italy and Spain, $n = 173$) separately from those that do not adopt a similar legislative framework (Portugal, United Kingdom and Germany, $n = 278$).

3.2   Description of Variables

3.2.1 On Corporate Performance

In order to measure corporate performance, we relied on the profitability efficiency. Efficiency is the ratio of output to input for a given production unit under given conditions, while profitability efficiency is the company's ability to generate revenue and profit based on its current labor, assets and capital stock.

Outputs should be the key business drivers critical to business success and inputs should be the resources that lead to the key business drivers. This study uses Fixed/Total Assets and Costs of Employees/Operating Revenue as input resources, while outputs are ROE and ROA ratios.

ROE and ROA are indicators that reflect future profitability expectations. Effective risk management has direct implication on the earning performance of the company (Mohammed and Knápková 2016).

Table 3 Descriptive statistics of the sample dataset

% Women

	Min	*Max*	*Mean*	*Median*	*SD*	*Gender quota target*
France	0.00	0.80	0.26	0.25	0.15	Yes
Italy	0.00	0.67	0.19	0.20	0.16	Yes
Spain	0.00	0.23	0.10	0.11	0.07	Yes
Germany	0.00	0.50	0.13	0.13	0.13	No
Portugal	0.00	0.43	0.25	0.22	0.14	No
United Kingdom	0.00	0.55	0.14	0.14	0.13	No
% Foreigners						
	Min	*Max*	*Mean*	*Median*	*SD*	
France	0.00	0.62	0.07	0.00	0.14	
Germany	0.00	0.50	0.09	0.04	0.12	
Italy	0.00	0.30	0.03	0.00	0.07	
Portugal	0.00	1.00	0.29	0.10	0.42	
Spain	0.00	0.13	0.02	0.00	0.03	
United Kingdom	0.00	0.83	0.14	0.08	0.18	

3.2.2 On Board Diversity

As proxies for board diversity, we relied on two variables: percentage of women and foreigners (Table 3).

3.3   Research Methodology

We followed a two-stage research design. In the first stage, we relied on a specific DEA model, selecting two inputs and two outputs in order to compute the relative profitability efficiency scores for each company (Decision-Making Unit—DMU) in the sample. In the second stage, the profitability efficiency score results served as the dependent variables and the board diversity features served as proxies for the independent variables.

In order to evaluate the effect of mandatory gender regulation, we divided the dataset into three parts: *all countries (A)*, *countries with mandatory gender regulation (B)* and *countries without it (C)*.

3.3.1 First Stage: Estimated Efficiency Scores

We computed the 451 companies' relative profitability efficiency, by relying on DEA. DEA is a non-parametric approach to measuring the

relative efficiencies of a group of peer units—DMUs. We relied on the non-oriented Slack-Based Model (SMB) (Tone 2001). The SBM identifies inefficiencies with a better discrimination power than the radial models CRS (Charnes et al. 1978; Färe and Lovell 1978) and VRS (Banker et al. 1984). It simultaneously accounted for the excess of inputs and lack of outputs, providing profitability efficiency scores ranging from 0 (minimum level) to 1 (highest level).

Therefore, we preferred the non-oriented SBM under the VRS frontier assumption, because it accurately discarded the effects of input and output approaches. Avkiran (2011) described the SBM as the best non-radial model where only semi-positive inputs are allowed, but where outputs can also be negative (Cooper et al. 2007). In our case, the input ratio variables are Fixed/Total Assets and Costs of Employees/ Operating Revenue, and the outputs are ROE and ROA ratios, which are sometimes negative due to bad performance.

$$
\begin{aligned}
&\min \tau = t - \frac{1}{m} \sum_{i=1}^{m} S^- / x_{i0} \\
&\text{s.t. } 1 = t + \frac{1}{s} \sum_{r=1}^{s} S^+ / y_{r0} \\
&t\,x_0 = X \wedge + S^- \\
&t\,y_0 = Y \wedge - S^+ \\
&\wedge \geq 0,\; S^- \geq 0,\; S^+ \geq 0,\; t > 0
\end{aligned} \tag{1}
$$

Our dataset consists of n DMU with $X = (x_{ij})$ input $\in \mathbb{R}^{m \times n}$ and $\Upsilon = (y_{ij})$ $\in \mathbb{R}^{s \times n}$ matrices being Λ a non-negative vector in $\mathbb{R}^n$ being t is a scalar variable >0. The VRS model is placed by imposing a constraint on λ such as $\sum_{j=1}^{n} \lambda_j = 1$. The vectors $S^- \in \mathbb{R}^m$ and $S^+ \in \mathbb{R}^s$ represent the input excess and output shortfalls of the expression and are called slacks. Therefore, the efficiency condition is reached when $S^{-*} = 0$ and $S^{+*} = 0$ and there are no input excesses or no output shortfall in any optimal solution.

3.3.2 Second Stage: Relationship with Diversity Board

The profitability efficiency scores are taken into account as the dependent variable while the percentage of foreigners and women on board are the independent variables. Our dependent variable is continuous, but it does not range values that are from minus infinity to plus infinity, and consequently we shifted it into a dummy variable. Therefore, the dummy dependent variable is equal to 1 if the company achieves an efficiency score higher than the average, and 0 if it does not.

The technique analysis relies on the logistic regression (Logit) that, unlike linear models, is more suitable when the dependent variable is categorical. The logistic regression model is formulated as follows:

$$\text{Profitability Efficiency Score (PF)} = \beta_0 + \beta_1 \%_{\text{Women}} + \beta_2 \%_{\text{Foreigners}} + \mu \quad (2)$$

$$\text{Probability} = \text{Log}\,(P/(1 - P)) = \beta_0 + \beta_1 \%_{\text{Women}} + \beta_2 \%_{\text{Foreigners}} + \mu \quad (3)$$

4   Results

The profitability efficiency scores are computed through (1) for each company (DMU). Only six companies reached the highest level, while 91% had an efficiency level ranging from ≤0.5, 3% had ≥0.75. The whole sector suffers from a lack of overall efficiency. The mean of profitability efficiency on SBM—VRS is 0.3014 (*A*). Countries adopting gender regulation quotas' average efficiency result is 0.3212 (*B*) while in those countries without gender regulation, it is 0.3295 (*C*). A closer look into slacks results provides the weight of fixed assets on total assets and ROE revealing, respectively, an excess and shortfall against the optimal value.

Regression of the profitability efficiency scores on various independent variables (% women, % foreigners) for the year 2015, based on the logit regression analysis (2) shows a chi-squared of 1.563 (*A*) with 2 degrees of freedom, thus revealing adequate goodness of the model adaptability. Within our two independent variables of concern, we identified a positive influence of women on corporate performance, with a coefficient of 0.003. However, we found a negative relationship between the presence of foreigners (−0.008) and corporate performance. So we reject RQ2. Our findings on national diversity are in line with the results of Eulerich et al. (2014) who identified a negative relationship between nationality diversity and corporate performance (Table 4).

The Logit regression analysis results (*B*) display a chi-squared of 3.162 (*B*) and a p-value of 0.206 thus indicating an adequate adaptability model goodness. Countries adopting a mandatory gender legislative framework regulation reveal a negative influence caused by women's presence, with a coefficient of −0.005. However, we found a positive relationship between women (coefficient 0.002) and corporate performance in countries without a mandatory gender regulation (*C*). Based on critical mass, results related to countries with a mandatory regulation show a negative relationship between female directors and performance

Table 4 Results of Logit regression analysis

	A	B	C
Women	0.003*	−0.005**	0.002
	(0.007)	(0.010)	(0.010)
Foreigners	−0.008**	−0.027*	0.005
	(0.007)	(0.018)	(0.007)
Constant	−0.49	−0.238	−0.865
	(0.158)	(0.264)	(0.207)
Descriptive statistics			
Chi squared	1.563**	3.162*	0.532**
p-value	0.458	0.206	0.767
n	451	173	278

*p-value <0.25

**p-value <0.90

even when women's participation on boards reached a certain threshold (coefficient −0.353). So we reject RQ1 (Table 5).

According to our research design, we observe that the mandatory gender regulation concerning women's presence probability effect (3) has a negative impact on corporate performance. In fact, the probability that a company reaches a high profitability efficiency score is greater when the presence of women on board is voluntary.

With reference to (*A*), a 10% increase of foreigners on boards leads to a reduction of 1.87% in a company's probability of achieving an above average efficiency level. This probability decreases further—reaching 3.69%—when 20% of board members are foreign.

Likewise, according to (*B*), in countries that practice positive discrimination for women, a 10% increase of female board members leads to a reduction of 1.23% in a company's ability to achieve an above average efficiency level.

This evidence enhances the decreasing trend of a further 2.44%, when the presence of women on boards reaches the 28% level.

With (*C*), an increase of 10% points enhances the efficiency results of a 0.42% probability and 0.85% when female presence reaches the 27% level.

5 Discussion and Conclusion

This research offers new insight into the relationship between board diversity and corporate performance measured through the profitability efficiency. Prior empirical research provides diverging results about the

Table 5 The probability influence compared to the percentage of foreigners and women on boards

A			
% foreigners on boards	0	10	20
Probability (%)	37.99	36.12	34.30
Difference (%)		−1.87	
		−3.69	
B			
% Women in countries with mandatory gender regulation	8	18	28
Probability (%)	43.10	41.87	40.66
Difference (%)		−1.23	
		−2.44	
C			
% Women in countries without mandatory gender regulation	7	17	27
Probability (%)	29.92	30.34	30.76
Difference (%)		0.42	
		0.85	

influence of board diversity on corporate performance. In our study, we analyze gender and national diversity on boards and their influence on firm performance. The empirical analysis was conducted on 451 European listed manufacturing firms for 2015.

We mostly found negative effects of board diversity characteristics on corporate performance, especially regarding national diversity and, for those countries with a mandatory gender regulation, for the presence of women. Our findings may be explained by the fact that board diversity cannot only result in a competitive advantage but may also reduce communication, complicate decision-making processes, increase the risk of in-groups and out-groups and damage cohesiveness (Bassett-Jones 2005). Consequently, these negative effects may impair management quality and corporate performance.

Adams and Ferreira (2009) find a negative relationship between the diversity of the board and corporate performance due to over-monitoring carried out by women. Adams and Ferreira (2007) also observe that directors' greater interference in the decision-making process could give rise to communication difficulties among administrators. In this case, gender diversity, which is a new element within the board, may create

disagreement among directors, which could affect performance. Our research results are in line with Ahern and Dittmar's findings (2012) about mandatory women quotas resulting in lower company value. They also further confirm the fact that when companies are forced to designate women, in some cases, they rely on directors with no specific previous experience or special skills that are able to generate benefits. In fact, their operational limits create slow and unproductive decision-making that then has a negative impact on business performance. Consequently, it is necessary to promote women's presence not by external coercive measures (such as laws) but within companies relying on social, labor justice and professional skills.

This paper contributes to existing literature on board diversity and corporate financial performance by being the first study to use a combined application of DEA-SBM model and a Logit regression to evaluate the impact of diversity management on performance.

Furthermore, we analyzed empirically the effects that mandatory regulation, introduced with the aim of increasing board gender diversity, has on corporate performance. The results of this paper show strong economic and public policy implications, especially for stakeholders, directors and law makers (mainly market regulators and governments), although the research methods, designed for a specific sector, involve certain limitations.

References

Adams, R. B., & Ferreira, D. (2007). A theory of friendly boards. *The Journal of Finance, 62*(1), 217–250.

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics, 94*(2), 291–309.

Adler, R. D. (2001). Women in the executive suite correlate to high profits. *Harvard Business Review, 79*(3), 30–32.

Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *Quarterly Journal of Economics, 127*(1), 137–197.

Akpan, E. O., & Amran, N. A. (2014). Board characteristics and company performance: Evidence from Nigeria. *Journal of Finance and Accounting, 2*(3), 81–89.

Alchian, A. A., & Demsetz, H. (1972). Production, information costs, and economic organization. *The American Economic Review, 62*(5), 777–795.

Avkiran, N. K. (2011). Association of DEA super-efficiency estimates with financial ratios: Investigating the case for Chinese banks. *OMEGA, The International Journal of Management Science, 39*(3), 323–334.

Bajary, P., Fox, J., & Kyoo, K. (2009). *The random coefficients logit model is identified* (NBER Working Paper No. 14934).

Banker, R., Charnes, A., & Cooper, W. (1984). Some models for estimating technical and scale inefficiencies in data envelopment analysis. *Management Science, 30,* 1078–1092.

Bassett-Jones, N. (2005). The paradox of diversity management, creativity and innovation. *Creativity and Innovation Management, 14*(2), 169–175.

Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics, 97,* 207–231.

Bonn, I., Yoshikawa, T., & Phan, P. H. (2004). Effects of board structure on firm performance: A comparison between Japan and Australia. *Asian Business & Management, 3*(1), 105–125.

Boone, A. L., Field, L. C., Karpoff, J. M., & Raheja, C. G. (2007). The determinants of corporate board size and composition: An empirical analysis. *Journal of Financial Economics, 85*(1), 66–101.

Campbell, K., & Minguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics, 83*(3), 435–451.

Carroll, A. B. (1996). *Business and society: Ethics and stakeholder management* (3rd ed.). Cincinnati, OH: South-Western College Publishing.

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review, 38*(1), 33–53.

Carter, D. A., D'Souza, F., Simkins, B. J., & Simpson, W. G. (2010). The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review, 18*(5), 396–414.

Charnes, A., Cooper, W., & Rhodes, E. (1978). Measuring the efficiency of decision-making units. *European Journal of Operational Research, 2,* 429–444.

Chen, G., Liu, C., & Tjosvold, D. (2005). Conflict management for effective top management teams and innovation in China. *Journal of Management Studies, 42*(2), 277–300.

Clarke, T. (2007). *International corporate governance: A comparative approach.* London: Routledge.

Clarkson, M. B. E. (1998). *The corporation and its stakeholders: Classic and contemporary readings.* Toronto: University of Toronto Press.

Cooper, W. W., Seiford, L. M., & Tone, K. (2007). *Data envelopment analysis: A comprehensive text with models, applications, references and DEA-solver software* (2nd ed.). New York: Springer.

Dahya, J., & McConnell, J. J. (2007). Board composition, corporate performance, and the Cadbury committee recommendation. *Journal of Financial and Quantitative Analysis, 42*(3), 535–564.

Darmadi, S. (2011). Board diversity and firm performance: The Indonesian evidence. *Corporate Ownership and Control Journal, 8*(2), 1–38.

Darmadi, S. (2013). Do women in top management affect firm performance? Evidence from Indonesia. *Corporate Governance: The International Journal of Business in Society, 13*(3), 288–304.

De Andres, P., Azofra, V., & Lopez, F. (2005). Corporate boards in OECD countries: Size, composition, functioning and effectiveness. *Corporate Governance: An International Review, 13*(2), 197–210.

Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management, 16*(1), 49–64.

Erhardt, N. L., Werbel, J. D., & Shrader, C. B. (2003). Board of director diversity and firm financial performance. *Corporate Governance: An International Review, 11*(2), 102–111.

Eulerich, M., Velte, P., & Van Uum, C. (2014). The impact of management board diversity on corporate performance—An empirical analysis for the German two-tier system (November 8, 2013). *Problems and Perspectives in Management (PPM), 12*, 25–39.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law & Economics, 26*(2), 301–325.

Färe, R., & Lovell, C. K. (1978). Measuring the technical efficiency of production. *Journal of Economic Theory, 19*(1), 150–162.

Farrell, M. (1957). The measurement of productive efficiency. *Journal of the Royal Statistical Society, 120*(3), 253–290.

Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & De Colle, S. (2010). *Stakeholder theory: The state of the art.* New York: Cambridge University Press.

Gabrielsson, J., & Huse, M. (2004). Context, behavior, and evolution: Challenges in research on boards and governance. *International Studies of Management & Organization, 34*(2), 11–36.

Gallego-Álvarez, I., García-Sánchez, I. M., & Rodríguez-Dominguez, L. (2010). The influence of gender diversity on corporate performance. *Revista de contabilidad, 13*(1), 53–88.

Heidrick & Struggles. (2014). *Towards dynamic governance 2014: European Corporate Governance Report.*

Hill, C. W. L., & Jones, T. M. (1992). Stakeholder-agency theory. *Journal of Management Studies, 29*(2), 131–134.

Hillman, A. J., Cannella, A. A., & Harris, I. C. (2002). Women and racial minorities in the boardroom: How do directors differ? *Journal of Management, 28*(6), 747–763.

Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review, 28*(3), 383–396.

Ibrahim, N. A., & Angelidis, J. P. (1994). Effect of board members' gender on corporate social responsiveness orientation. *Journal of Applied Business Research, 10*(1), 35.

Jackling, B., & Johl, S. (2009). Board structure and firm performance: Evidence from India's top companies. *Corporate Governance: An International Review, 17*(4), 492–509.

Jafari, M., Aghaei Chadegani, A., & Biglari, V. (2011). Effective risk management and company's performance: Investment in innovations and intellectual capital using behavioral and practical approach. *Journal of Economics and International Finance, 3*(15), 780–786.

Jensen, M. C. (1983). Organization theory and methodology. *Accounting Review, 58*(2), 319–333.

Jensen, M. C. (2000). Value maximization and the corporate objective function. In M. Beer & N. Nohria (Eds.), *Breaking the code of change* (pp. 37–58). Boston: Harvard Business School Press.

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.

Kanter, R. M. (1977). *Men and women of the corporation*. New York: Basic Books.

Kiel, G. C., & Nicholson, G. J. (2003). Board composition and corporate performance: How the Australian experience informs contrasting theories of corporate governance. *Corporate Governance: An International Review, 11*(3), 189–205.

Kim, H., & Lim, C. (2010). Diversity, outside directors and firm valuation: Korean evidence. *Journal of Business Research, 63*(3), 284–291.

Konrad, A. M., Kramer, V., & Erkut, S. (2008). Critical mass: The impact of three or more women on corporate boards. *Organizational Dynamics, 37*(2), 145–164.

Kramer, V. W., Konrad, A. M., Erkut, S., & Hooper, M. J. (2006). *Critical mass on corporate boards: Why three or more women enhance governance* (pp. 2–4). Boston: Wellesley Centers for Women.

Loden, M., & Rosener, J. B. (1991). *Workforce America!: Managing employee diversity as a vital resource*. Homewood: McGraw-Hill.

Luo, X. (2003). Evaluating the profitability and marketability efficiency of large banks: An application of data envelopment analysis. *Journal of Business Research, 56*(8), 627–635.

Luoma, P., & Goodstein, J. (1999). Research notes. Stakeholders and corporate boards: Institutional influences on board composition and structure. *Academy of Management Journal, 42*(5), 553–563.

Macey, J. R. (1998). Fiduciary duties as residual claims: Obligations to non-shareholder constituencies from a theory of the firm perspective. *Cornell Law Review, 84,* 1266.

Mallin, C. (2004). *Corporate governance.* New York: Oxford University Press.

Miller, T., & del Carmen Triana, M. (2009). Demographic diversity in the boardroom: Mediators of the board diversity–firm performance relationship. *Journal of Management Studies, 46*(5), 755–786.

Mohammed, H. K., & Knápková, A. (2016). The impact of total risk management on company's performance. *Procedia-Social and Behavioral Sciences, 220,* 271–277.

Näsi, J. (1995). What is stakeholder thinking? A snapshot of a social theory of the firm. In J. Näsi (Ed.), *Understanding stakeholder thinking* (pp. 19–32). Helsinki: LSR-Julkaisut.

Oakley, J. G. (2000). Gender-based barriers to senior management positions: Understanding the scarcity of female CEOs. *Journal of Business Ethics, 27*(4), 321–334.

Oxelheim, L., & Randøy, T. (2003). The impact of foreign board membership on firm value. *Journal of Banking & Finance, 27*(12), 2369–2392.

Pelled, L. H., Eisenhardt, K. M., & Xin, K. R. (1999). Exploring the black box: An analysis of work group diversity, conflict and performance. *Administrative Science Quarterly, 44*(1), 1–28.

Peng, M. W., Buck, T., & Filatotchev, I. (2003). Do outside directors and new managers help improve firm performance? An exploratory study in Russian privatization. *Journal of World Business, 38*(4), 348–360.

Perryman, A. A., Fernando, G. D., & Tripathy, A. (2016). Do gender differences persist? An examination of gender diversity on firm performance, risk, and executive compensation. *Journal of Business Research, 69*(2), 579–586.

Pfeffer, J., & Salancik, G. R. (2003). *The external control of organizations: A resource dependence perspective.* Redwood City: Stanford University Press.

Post, C., & Byron, K. (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal, 58*(5), 1546–1571.

Randøy, T., Thomsen, S., & Oxelheim, L. (2006). A Nordic perspective on corporate board diversity. *Age, 390*(0.5428), 1–26.

Robinson, G., & Dechant, K. (1997). Building a business case for diversity. *The Academy of Management Executive, 11*(3), 21–31.

Rose, C. (2007a). Does female board representation influence firm performance? The Danish evidence. *Corporate Governance: An International Review, 15*(2), 404–413.

Rose, J. M. (2007b). Corporate directors and social responsibility: Ethics versus shareholder value. *Journal of Business Ethics, 73*(3), 319–331.

Rose, P. (2007c). The corporate governance industry. *Journal of Corporation Law, 32*(4), 887.

Shrader, C. B., Blackburn, V. B., & Iles, P. (1997). Women in management and firm financial performance: An exploratory study. *Journal of Managerial Issues, 9*(3), 355–372.

Siciliano, J. I. (1996). The relationship of board member diversity to organizational performance. *Journal of Business Ethics, 15*(12), 1313–1320.

Smith, N., Smith, V., & Verner, M. (2006). Do women in top management affect firm performance? A panel study of 2,500 Danish firms. *International Journal of Productivity and Performance Management, 55*(7), 569–593.

Tone, K. (2001). A slacks-based measure of efficiency in data envelopment analysis. *European Journal of Operational Research, 130,* 498–509.

Torchia, M., Calabrò, A., & Huse, M. (2011). Women directors on corporate boards: From tokenism to critical mass. *Journal of Business Ethics, 102*(2), 299–317.

Tosi, H. L., Jr. (2008). Quo Vadis? Suggestions for future corporate governance research. *Journal of Management and Governance, 12*(2), 153–169.

Ujunwa, A. (2012). Board characteristics and the financial performance of Nigerian quoted firms. *Corporate Governance: The International Journal of Business in Society, 12*(5), 656–674.

Ujunwa, A., Okoyeuzu, C., & Nwakoby, I. (2012). Corporate board diversity and firm performance: Evidence from Nigeria. *Revista de Management Comparat International, 13*(4), 605.

Van den Berghe, L. A., & Levrau, A. (2004). Evaluating boards of directors: What constitutes a good corporate board? *Corporate Governance: An International Review, 12*(4), 461–478.

Van Der Walt, N., & Ingley, C. (2003). Board dynamics and the influence of professional background, gender and ethnic diversity of directors. *Corporate Governance: An International Review, 11*(3), 218–234.

Vani Kant, B. (2001). *Logit and Probit.* London: Sage.

Voordeckers, W., Van Gils, A., & Van den Heuvel, J. (2007). Board composition in small and medium-sized family firms. *Journal of Small Business Management, 45*(1), 137–156.

Zahra, S. A., & Stanton, W. W. (1988). The implications of board of directors composition for corporate strategy and performance. *International Journal of Management, 5*(2), 229–236.