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Boardroom Diversity, Corporate Governance & Innovation in the UAE Banks

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Abstract

Corporate governance carries strategic importance and should be addressed correctly by decision makers. Corporate finance literature suggests that diverse boards are a part of good corporate governance practice. However, it is not clear how good corporate governance- particularly diverse board characteristics might affect the corporate innovation and innovation search strategies. Utilizing the data from 25 banks listed in the UAE stock exchanges, this study evaluates the impact of boardroom diversity on firm innovativeness both before and after the drop in the oil prices. The results show that while gender and education do not significantly affect innovativeness of banks, having more experienced and independent board members enhances the innovation. The effect of experienced board members on innovation is more pronounced during the oil price drop period, while the effect of independent board members decrease after the drop in the oil prices.

Keywords: Board diversity, corporate governance, innovation, bank, UAE, oil crisis

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1-Introduction

The board of directors carries out a very important role in corporations. By advising and monitoring the managers, board of directors reduces the agency costs and guides the companies to their missions. Hence, better and improved firm performance and subsequently enhanced overall value for the whole society starts from the boardrooms. Previous literature confirms the effect of boardroom diversity on firm value (Carter et al., 2003; Erhardt et al. 2003; Carter et al., 2010). However, in today's world, better firm value is not the only goal for the corporations. Firms have to seek innovative technologies and ideas in order to survive in the long term. During the last decade, the corporate world has seen that firms that cannot keep up with the latest technologies and do not adopt innovative approaches are doomed to failure.

Innovation provides a competitive advantage for organizations in the globalized business environment (De Dreu, 2006; Eisenbeiss, et. al., 2006). Creating new knowledge through innovation is viewed as the core of organizational success (Nonaka and Takeuchi, 1995). The importance of innovation for organizational success has been increasingly noted in the literature (Agars, et. al., 2008; Anderson, et. al., 2004; West, 2002). In today's world, firms have to seek innovative technologies and ideas in order to succeed in the long term.

Innovation literature has investigated several aspects of innovation such as how innovation affects firm performance (Hitt, et. al. 1996); how leaders affect employees' innovativeness (Scott and Bruce, 1994); how managerial compensation improves innovation (Baranchuk et. al. 2014) and how CEO and top management characteristics lead to innovation (Hirshleifer et. al., 2012; Chemmanur et al., 2014). However, there is not enough evidence on the effects of board characteristics on firm innovativeness. To fulfill that gap in the literature, this study aims to investigate whether having diverse boards leads to enhance corporate innovation both during good times and during hard times in the UAE.

Boardroom diversity is fully supported by the leaders of the UAE. In 2012, the UAE cabinet has approved that each corporate board is required to have at least one female member at the board. This study extends beyond the gender diversity and looks for experience, education, as well as independence of the board of directors and their subsequent impact on corporate innovativeness. The sample is divided into two

economic regimes: before and after the oil price drop to understand what type of board characteristics perform better and support innovativeness during good and bad times.

Measuring innovation is one of the challenges for innovation studies. While most of the studies use self-reported innovation data gathered from surveys, some use data on R&D expenditures or number of patents. However, most patents do not transform into tangible goods and profit for the firm (Stevens and Burley, 1997). Therefore, instead of using subjective measures of innovation from questionnaires or traditional innovation outputs, we follow Bos et.al. (2013) and examine bank's ability to minimize costs through innovations. In order to measure that, first we estimate annual minimum cost frontiers to create a global frontier and then measure each bank's distance to the global frontier to obtain its technology gap. If the bank manages to innovate, technology gap decreases. This measure allows us to examine the innovation objectively in banks, which unlike manufacturing firms, in general don't have patents and R&D expenditures.

The results show that having more experienced and independent members on banks' boardrooms enhances the innovation. The effect of experienced board members on innovation is more pronounced during the oil price drop period, while the effect of independent board members decrease after the drop in the oil prices. Besides, being a pioneer study testing the effect of various patterns of boardroom diversity and corporate innovation, the results of this study will help policy makers to address and formulate new rules or regulations to enhance corporate governance practices, which will lead to better overall value for all society.

The rest of the study is organized as follows. Section 2 provides a brief overview of the literature. Section 3 develops the hypotheses. The data and methodology is explained in Section 4. The results are presented in Section 5 and Section 6 concludes.

2- Literature Review

The effects of boardroom diversity on enhanced corporate governance is a hotly debated issue and it has been receiving a well-deserved, growing attention of many researchers. Corporate governance literature has shown that beyond the effect on firm value (Carter et al., 2003; Erhardt et al. 2003; Carter et al., 2010; Iren 2016),

boardroom diversity enhances boardroom decision making by lessening the tendency to engage in groupthink (O'Connor, 2006), increasing the diversity of opinions represented in the boardroom (Ramirez, 2003 & Polden, 2005) and having positive cognitive effects such as creativity, innovation, new ideas and insights (Ruigrok et al., 2007; Kang et al., 2007; Deutsch, 2005; Miller and Triana, 2009). Therefore, diverse boardrooms could fuel the innovation activities and influence the level of firm innovation. However, diverse boards might also have coordination problems, might lack cohesion and need a longer time to reach decisions. In this perspective, it is important to understand whether boardroom diversity leads or hinders the innovation.

Innovation is considered to be one of the most important determinants of firm performance (Torchia et. al, 2011). Firms seeking for long-term survival have to employ innovative technologies and ideas. Innovation helps firms gain competitive advantage (Hitt et al., 1996) and expand market share (Franko, 1989). Creating new knowledge through innovation is viewed as the core of organizational success (Nonaka and Takeuchi, 1995). The importance of innovation for organizational success has been increasingly noted in the literature (Agars et. al. 2008; Anderson et. al. 2004; West, 2002).

Some recent studies have looked in how corporate governance such as managerial compensation (Baranchuk et. al., 2014); CEO and top management characteristics (Hirshleifer, et. al., 2012; Chemmanur et al., 2014) or institutional ownership (Aghion et. al., 2013) affects the innovation. Balsmeier, et. al. (2014) show that firms, which have independent directors with a background from more innovative firms, tend to be more innovative. However, there is not enough evidence on the effects of different board characteristics on firm innovativeness. Particularly, there are no studies focused on Middle Eastern economies.

Financial innovation for banks can be grouped into new products such as ATMs, credit or debit cards cards; new production processes such as securitization of loans; and new organizational forms such as diversified banks with traditional and non traditional services (Frame and White, 2004). Hannan and McDowell (1984) show that market concentration affects the use of ATMs. Hirtle (2009) shows that as banks use more credit derivatives, the credit supply to large firms increases. Nadauld and Weisbach (2012) show that securitization lowers the borrowing costs. Franke and Krahnen (2005) document that the use of collateralized debt obligations lead to an increase in bank lending. On the other hand, some other studies find that financial

innovation can actually harm the economy by increasing risk-taking (Wagner, 2007), reduction in lending standards and hence causing fragility (Keys et. al. 2010; Dell' Ariccia et. al. 2008; Gennaioli et. al., 2012). In order to have a wider perspective on banking innovation, we've used a measure not only focusing on the introduction and use of specific bank technologies or processes. Following Bos et.al. (2013), we've used an overall innovation measure of innovation. Utilizing that measure, we've investigated whether having diverse boards leads to an enhanced innovation both during good times and during hard times.

Prior evidence about the impact of economic crisis on corporate innovation has been ambiguous. On one hand economic crisis limits the social financial capabilities to invest into new products and/or technologies, and on the other hand the crisis filters the incompetent market players and creates additional incentives and opportunities to existing players to innovate and advance for higher chance of survival.

On the positive side, Filippetti and Archibugi (2011) addresses the impact of the economic downturn on innovation across Europe. Using micro- and macro-data, they find that the competences and quality of the human resources, the specialization in the high-technology sector, together with the development of the financial system seem to be the structural factors which are able to offset the effect of the economic downturn on innovation investments of firms across Europe. Archibugi et. al. (2013a) found that the 2008 economic crisis led to a concentration of innovative activities within a small group of fast growing new firms and those firms already highly innovative before the crisis. The companies in pursuit of more explorative strategies towards new product and market developments cope better with the crisis. Archibugi et. al. (2013b) survey European firms to compare drivers of innovation investment before, during and following the 2008 financial crisis. They found that before the crisis, incumbent enterprises are more likely to expand their innovation investment, while after the crisis a few, small enterprises and new entrants are ready to "swim against the stream" by expanding their innovative related expenditures.

On the negative perspective, Lucidi and Kleinknecht (2009) use a sample of 3,000 Italian firms and found that firms with a high share of flexible workers, high labor turnover and lower costs of labor (relative to capital) experienced significantly lower rates of labor productivity growth, a labor productivity crisis. They argue that the crisis in Italian labor productivity growth is caused by the lack of labor innovation

resulted from a low-productive and labor-intensive growth path. Paunov (2012) documented that the crisis led many firms to stop ongoing innovation projects. She also finds that firms with access to public funding were less likely to abandon these investments, while younger firms and businesses supplying foreign multinationals or suffering export shocks were more likely to do so.

Given the mixed results in the previous literature, this study aims to contribute to the debate by examining the impact of recent oil price plunge since 2014, which has been a series of nightmares to many oil producing nations, on the corporate governance and innovation among the banks in the UAE.

3- Hypotheses

Existence of female directors can bring diverse opinions, different knowledge and expertise to the boards (Daily and Dalton, 2003; Huse, 2007). These different perspectives might positively contribute to the firm innovation (Miller and Triana, 2009). Therefore, we can expect the gender diversity enhance bank innovation.

Hypothesis 1: Gender diversity on boards has a significant positive impact on bank innovation.

Educational level of directors might affect directors' perspectives, cognition and decision making. Wincent et. al. (2010) found that the total number of board members with undergraduate degrees has a positive impact on innovation. Similarly, Dalziel et. al. (2011) showed that the number of directors who have degrees from elite institutions positively impact R&D expenditures. Therefore, we can expect the educational level of directors to positively affect firm innovation.

Hypothesis 2: Directors' education level has a significant positive impact on bank innovation.

Hillman et. al. (2000) argue that experienced directors bring expertise and knowledge of strategic decision making. As directors spend more time serving on boards, they build more firm-specific expertise, which subsequently enhances directors' decision making. Therefore, we can expect a positive relationship between

director experience and firm innovation.

Hypothesis 3: Having more experienced directors on boards has a significant positive impact on bank innovation.

Previous literature focusing on the impact of independent directors shows that independent boards are more likely to reach decisions, which are in line with shareholder-wealth maximization (Fama and Jensen, 1983). However, this tough monitoring role of independent directors might lead managers to dismiss exploratory and innovative strategies (Manso, 2011). Faleye et. al. (2011) find that independent director existence in boards leads to less patents. This result is inconsistent with the guardian role that the agency theory assigns to outside, independent directors (Jensen and Meckling, 1976). On the other hand, Hoskisson et. al. (2002) found out that presence of independent directors increases external innovation. Independent directors do not have the experience or deep knowledge about the firm's daily operations; as a result, their risk perceptions might be different. (Hoskisson et. al. 2002) Therefore, they might support innovation, which might seem risky for inside directors. Hence, we can expect a positive or a negative impact of independent directors.

Hypothesis 4: Having independent directors on boards has a significant positive/ negative impact on bank innovation.

3- Data and Methodology

3.1 Data

The sample consists of 25 banks listed in UAE stock markets, in which 14 banks are listed in Abu Dhabi Stock Market (ASM) and 11 banks are listed in Dubai Financial Market (DFM). Firm governance variables, such as board and ownership data are hand collected from bank financial reports. Year-end financial data of each bank are gathered from *BankScope* and *DataStream*. These two databases complement each other for the missing data. The sample period is from 2012 to 2015. On September 2014, oil price has started to fall and it didn't come back to its price before. Therefore, we've divided the sample into two and considered two separate economic regimes: An economic booming period where the oil price stayed above

$90/barrel (2012-13) and a recession period where the oil price fell under $60/barrel (2014-15).

3.2 Measuring Innovation - Technology gaps

Following Bos et al. (2013), we calculate technology gap between a firm and a benchmark covering all available technologies as a proxy for the innovation. We measure the technology gap of each firm by using an array of different indicators reflecting both input into and output of financial innovations. According to Bos et. al.(2013), firms are always assumed to minimize production cost along with the invention or adoption of new technology. To present the idea of such technical change in cost function, we apply a meta frontier approach, as introduced in the early work by Hayami and Ruttan (1970), Mundlak and Hellinghausen (1982) and Lau and Yotopoulos (1989). The meta frontier represents the set of available technologies across firms and/or across time. Technical change consists of the application of a new technology as measured against the benchmark meta frontier, which combines all available technologies.

To obtain technology gap of each firm in each year, we apply Stochastic Frontier Analysis (SFA) to estimate the minimum cost frontier available in each year and then envelop the annual cost frontiers to obtain a meta frontier[1].

In the first step, the following annual translog cost frontiers are estimated using stochastic frontier analysis:

$$TC_{it} = f^{*}(w_{it}, y_{it}, z_{it})e^{v_{it}+u_{it}}$$

where w represents the vector of input prices, y is the output vector, z is a vector of control variables, v is random noise assumed to be i.i.d., and u is the inefficiency term assumed to be i.i.d. To take inefficiency into account, we use stochastic frontier analysis, which is ignored by conventional measures of productivity (e.g., TFP) that measure technical change as efficiency change.

It is assumed that the banks minimize total costs and operate in perfectly

[1] Refer to Hayami and Ruttan (1970), Mundlak and Hellinghausen (1982), and Lau and Yotopoulos (1989)

competitive input markets. Bank production is modeled using the well-known intermediation approach. Output y consists of year-end stocks of loans, investments, and off-balance sheet items. Input w corresponds to the prices of fixed assets, labor, and borrowed funds. The equity ratio z is included as a control variable to account for different risk profiles of banks (Hughes and Mester (1993)). Cost efficiency score estimates are obtained as follows:

$$CE_{it} = \exp(-\hat{\mu}_{it})$$

where CE equals one for banks that operate on the annual frontier (no inefficiency). Banks with inefficiencies operate above the annual cost frontier and have cost efficiency scores less than one.

In the second step, the meta frontier is estimated as the envelope around the annual cost frontiers. We utilize the parameter estimates for the annual cost frontiers and obtain estimates of the technology gap (GAP) by fitting the minimum cost meta frontier (fmeta) as follows:

$$Min.\text{Distance} = \sum_{t=1}^{T}\sum_{i=1}^{N} |\ln f^{*}(w_{it}, y_{it}, z_{it}) - \ln f_{meta}(w_{it}, y_{it}, z_{it})|$$

subject to $\ln f^{*}(.) \geq \ln f_{meta}(.)$

In this constrained minimization problem, the absolute distance between the annual cost frontier and the meta frontier is minimized subject to the constraint that the total cost from the annual frontier is equal to or larger than total cost from the meta frontier. As a result, the technology gap is defined as:

$$GAP_{it} = \frac{f_{meta}(w_{it}, y_{it}, z_{it})}{f^{*}(w_{it}, y_{it}, z_{it})}$$

Innovations by firms may lead to improvements in their technology set and, consequently, a smaller gap between the current technology set and the (potentially available) best technology set, or meta frontier. The result is an increase in *GAPit*, which is bounded between 0 and 100, where the latter is reached when firms operate on the meta frontier.

The technology gap of a leader that is positioned on the global frontier in two consecutive periods will maintain a technology gap equal to one. Likewise, a laggard can close the technology gap by lowering his cost (catching up) and moving towards the global frontier (lowering the technology gap). Neck-and-neck firms may operate on the annual cost frontier under the best potential available technology in the current period and, subsequently, shift the annual cost frontier towards the global frontier in the next period by improving their technology set through innovations. In sum, the technology gap as a measure of overall innovation agrees with the concept of innovation proposed by Aghion et al. (2005).

Table 1 shows the descriptive statistics for the innovation index and its components. On average, the innovation index is 93.21 for the sample banks. Average loans exceeds the investments and off balance sheet items. Typically, the amount of total of loans, investments and off balance sheet items exceeds the amount of fixed assets, labor and borrowed funds.

3.3 Measuring Governance Variables

In order to measure the governance characteristics, we've considered several variables such as:

Hypothesis Variables

i. Gender: This variable is a dummy variable that equals '1' if the bank has at least 1 female director.
ii. Education: This is measured by two variables:
    a. Ed_Und is the proportion of directors having undergraduate education qualification.
    b. Ed_Grad is the proportion of directors having graduate education qualification.
iii. Experience: This is measured by the number of years directors are serving at the bank.
iv. Proportion of Independent Directors: This variable indicates the proportion of outside independent directors to the total number of directors on the board of the firm. Following the resource dependency approach, boards dominated by independent directors are expected to be more effective.

Control Variables

i. Board Size: This variable shows the total number of directors on the board of a company.
ii. CEO-Chairperson Duality: This variable is a dummy variable that equals '1' if the CEO is not the chairman or vice-chairman of the board of directors and '0' otherwise. Even where CEO and Chairman/vice-chairman are different individuals but belong to the same family based on name recognition, we have considered it as a case of CEO-Chair duality.
iii. Number of Board Meetings: In UAE, companies usually hold at least one board meeting in each quarter i.e. a minimum of four meetings in a financial year. The frequency of holding the board meetings has been factored in by way of a dummy variable which equals '1' if a company has held more than four meetings in a financial year and '0' otherwise.
iv. Ownership structure: government (major shareholders) ownership, which indicates the proportion of government ownership to the total shareholders.
v. Bank size: This variable is measured as the natural logarithm of total assets of banks operating in the UAE.

Table 2 shows the descriptive statistics for the control variables. Banks in the sample have an average of 8 directors on the board, where almost half of them are independent directors (3.9). On average, government is the biggest shareholder for the banks in the sample.

3.4 Methodology

The following two models are regressed in both the booming period (2012-2013) and the recession period (2014-2015). In each case, we use panel data methodology using the generalized least square (GLS) random effect method. Both the innovation index and the governance index range from 0 to 100.

$$Innovation\ Index_{i,t} = \beta 0 + \beta 1 * Female_{i,t} + \beta 2 * Ed\_Und_{i,t} + \beta 3 * Ed\_Grad_{i,t} + \beta 4 * Exp_{i,t} + \beta 5 * Indep_{i,t} + \beta 6 * Board_{i,t} + \beta 7 * Asset_{i,t} + \beta 8 * Dual_{i,t} + \beta 9 * Meet_{i,t} + \beta 10 * Govt_{i,t} + \varepsilon_{it}$$

Table 3 exhibits the descriptive statistics for the independent variables. The banks in the sample have very few female directors on their boards. They have more directors with undergraduate degree than directors with graduate degrees and on average directors have around seven years of experience in the bank.

4- Results

Before analyzing the effects of board of directors' characteristics on innovation and governance, the sample is divided into two periods and a mean comparison is conducted to see what has changed for the banks after the oil price drop. Table 4 shows the results of the mean comparison tests. Before and after the crisis, only the experience of the directors is significantly different. After the oil price crisis, the directors were replaced by the ones with higher experience (average of 7 years post-crisis when compared to average of 4 years pre- crisis) After the crisis, the number of board meetings were significantly reduced from 10 on average to 8 on average. And on average while the loans have increased after the oil price increase, investments have significantly decreased.

Table 5 shows the results of the regression analysis. Existence of female directors on boards has no effect on innovation. This can be attributed to the low level of female representation on the boards of banks in the sample. Also, existence of board members with undergraduate degrees does not have a significant effect on innovation. This could be expected, as holding at least an undergraduate degree is the usual norm to become a board member. Experience of board members have a positive significant impact on the innovation index for the overall sample period. When the sample is divided, experience has a more enhanced impact during the recession period. The results suggest that during hard times experience can be more valuable and improve the innovativeness of the banks. Also, the independence of board members has a significant positive impact on bank innovation. However, the effect is

more pronounced before the crisis period. Besides, CEO/Chairman duality has no significant impact on innovation for the whole sample. But, when the tests are repeated for booming and recession periods separately, it is noticed that the CEO/ Chairman duality improves the bank innovation for the booming period, while the same effect is not observed for the recession period.

5-Conclusion

Better corporate governance practices are very much desired all over the world. However, it is not clear if better corporate governance improves the firm innovativeness or not. This study aims to list the main board characteristics, which lead to enhanced innovation. The results show that gender and education do not significantly contribute to the bank innovativeness. However, the results should be interpreted carefully, as the number of female directors in the sample is very low and this leads to insignificant results. In 2012, UAE government has passed a legislation requiring female board members in every public company. Although the female directors quota has been announced by the end of 2012, they are not fully implemented yet. Once the quotas are implemented, the effect of gender of directors should be tested again.

The results show that boards with more experienced and independent directors lead to more enhanced bank innovation. While the effect of experienced directors on innovation increase during the crisis period, the effect of independent directors on innovation decreases during the crisis term. Although, the literature has shown that existence of independent directors leads to better overall value for the firm, their impact on innovation might not be same. If the view that an insider director would know more about the company's core business, pay more attention to internal development and will be more open to exploring and adopting new strategies (Hoskisson et. al, 2002) is valid, then we would expect a negative or insignificant effect of independent directors on the firm innovation. However, our results confirm the view that independent directors have different risk perceptions (Hoskisson et. al. 2002), which leads to bold decisions towards innovation.

Future avenues of research include investigation of more countries in the region and expand the data set by collecting data for more banks operating in the

Middle East. It is also essential to compare the Islamic banks with the conventional banks in their approach towards innovation and corporate governance.

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Table 1: Descriptive Statistics - Components of Innovation Index (2002-2005)

	Loans	*Invest*	*Off-Bal*	*Fixed*	*Labor*	*Borrowed*
Obs	100	100	100	100	100	100
Mean	114,553	42,837	5,391	1,324	714	5,924
SD	44,391	20,361	2,539	668	383	2,522
25%	65,895	16,589	2,074	557	332	3,358
50%	112,866	38,805	5,624	1,362	653	5,624
75%	104,653	35,817	4,910	1,274	581	5,285
Kur	-0.71	-0.97	-0.80	-1.10	-0.99	-0.97
Skw	0.03	0.05	0.00	-0.02	0.31	0.05
Min	36,079	11,477	1,186	265	185	1,904
Max	205,914	83,794	10,550	2,646	1,531	10,892

Table 2: Descriptive Statistics - Control Variables (2002-2005)

	Board	*Ind*	*Dual*	*Meet*	*Govt*	*Asset*
Obs	100	100	100	100	100	100
Mean	8	3.9	0.35	10.1	0.6994	45,851
SD	1.95	1.65	0.49	1.80	0.12	15,201
25%	6	3	0	8	0.63	25,420
50%	8	3	0	11	0.63	58,243
75%	6	3	0	8	0.63	88,246
Kur	-0.76	3.80	-1.72	-1.23	2.43	-0.85
Skw	0.19	1.89	0.68	0.19	1.88	0
Min	5	2	0	8	0.63	22,352
Max	11	9	1	13	1	98,685

Table 3. Descriptive Statistics - Independent Variables (2012-2015)

	Female	*Ed_Und*	*Ed_Grad*	*Exp*
Obs	100	100	100	100
Mean	0.2	5.1	2.8	6.8
SD	0.41	1.52	0.62	1.85
25%	0	4	2	3
50%	0	5	3	6
75%	0	4	2	8
Kur	0.70	0.22	-0.21	0.25
Skw	1.62	0.72	0.12	0.35
Min	0	3	2	1
Max	1	8	4	11

Table 4: Mean Comparison Test

	Parametric analysis: Mean-comparison test				Non parametric analysis: K-S Test			
	Pre-data	**Post-data**	**Mean Difference**	**p-values**	**Pre-Cum**	**Post-Cum**	**Combine K-S**	**p-values**
Board	9	8	-1	0.567	9	8	-1	0.852
Indep	8	2	-6	0.432	9	2	-7	0.452
Dual	0.3	0.4	0.1	0.452	0.4	0.3	0.1	0.678
Meet	10	8	-2	0.094	11	9	-2	0.050
Govt	0.7	0.7	0	0.857	0.75	0.75	0	0.723
Asset	40,215	52,001	11,786	0.020	42,102	50,125	8,023	0.035
Loans	101,012	148,628	47,616	0.023	100,025	140,967	40,942	0.034
Invest	59,080	40,765	(18,315)	0.032	62,020	39,087	(22,933)	0.042
Off-Bal	8,052	7,027	(1,025)	0.421	8,111	7,127	(984)	0.521
Fixed	1,985	2,598	613	0.632	2,010	2,583	573	0.723
Labor	1,125	867	(258)	0.852	1,012	821	(191)	0.854
Borrowed	3,250	8,226	4,976	0.412	2,850	9,462	6,612	0.521
Female	0	1	1	0.120	0	1	1	0.220
Ed_Und	8	5	-3	0.124	7	5	-2	0.142
Ed_Grad	6	4	-2	0.123	5	3	-2	0.222
Exp	4	7	3	0.035	5	7	2	0.042

Table 5: Regression Tests

Explanatory Variables	INV Index		INV Index Pre-Crisis		INV Index Post-Crisis		Wald	
Female	-12.895		-14.25		-17.012		0.012	
	(30.43)		(30.21)		(33.33)			
Ed_Und	25.012		26.325		28.985		0.521	
	(35.62)		(29.33)		(30.22)			
Ed_Grad	-37.521		-38.524		-33.325		0.214	
	(23.85)		(26.58)		(26.32)			
Exp	4.258	**	2.325	*	7.777	***	3.890	**
	(1.22)		(1.40)		(1.23)			
Indep	5.852	***	8.529	***	3.453	*	3.020	**
	(1.35)		(2.35)		(2.01)			
Board	2.325		3.253		2.23		1.250	
	(5.33)		(5.32)		(4.21)			
Asset	4.21		5.32		3.42		3.020	
	(5.32)		(4.21)		(2.85)			
Dual	2.323		2.02	*	2.325		0.250	
	(1.65)		(1.21)		(1.85)			
Meet	6.243		5.852		7.285		1.258	
	(8.52)		(7.62)		(8.85)			
Govt	3.215		2.985		3.012		0.528	
	(5.25)		(6.52)		(5.98)			
Constant	-5.214		5.248		-8.245		1.246	
	(6.25)		(6.99)		(8.52)			
n (firm-year)	100		50		50			
R-Sq	13.25		14.56		12.52			
Adj R-Sq	12.85		13.89		12.05			