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Examining the effect of corporate and capital structure on operational efficiency in Chilean firms

Examinando el efecto de la estructura corporativa y de capital sobre la eficiencia operacional de firmas chilenas

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RESUMEN

Analizamos los efectos de la estructura corporativa y de capital sobre la eficiencia operacional de las empresas chilenas. La estructura corporativa es medida por la estructura de propiedad y la discrecionalidad gerencial, mientras que la estructura de capital es cuantificada mediante el endeudamiento, deuda de corto plazo y la extensión de la relación comercial con los financiadores. A partir de datos extraídos de la Encuesta Longitudinal de Empresas (ELE), estimamos un modelo de regresión por variables instrumentales (IV). Nuestros resultados sugieren que la dilución de la propiedad tiene efectos diferenciados entre firmas pequeñas y grandes. En firmas pequeñas, la dilución de la propiedad reduce la eficiencia operacional, mientras que en firmas grandes la aumenta. El endeudamiento, la deuda de corto plazo y el monitoreo de financiadores externos actúan como un medio efectivo de control que impulsa la eficiencia operacional de las firmas chilenas.

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ABSTRACT

We analyzed the effects of corporate and capital structures on the operational efficiency of Chilean companies. Corporate structure was measured by ownership structure and managerial discretion while capital structure is quantified by indebtedness, short-term debt and the commercial relationship with funders. Based on data from the Longitudinal Business Survey (LBS), we formulated a regression model using instrumental variables (IV) to determine these effects. Our results suggest that ownership dilution has different effects depending on company size. In small firms, ownership dilution reduces operational efficiency, while in large firms it increases. As for managerial discretion, this only negatively affects the operational efficiency of small firms with diluted ownership. Leverage, short-term debt and monitoring by external funders act as effective forms of control that drive operational efficiency in Chilean companies.

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INTRODUCTION

Agency problems have been a widely discussed topic over the last few decades due to its effects on corporate governance and company decision-making. Typically, companies facing greater conflicts of interest due to managerial discretionary decisions experience a lower degree of operational efficiency in asset utilization (Ang et al., 2000).

Using asymmetric information and agency theories, various theoretical and empirical studies have analyzed these conflicts and their associated costs. Studies based on agency theory argue that conflicts of interest and lower operational efficiency are the consequence of overinvestment. Asset accumulation that exceeds the optimal level does not necessarily translate into higher compensatory sales (Jensen, 1986). International evidence has indicated that this problem is related to certain business characteristics. Larger firms, diluted ownership, and low growth prospects are often related to the loss of efficiency (Jensen and Mecking, 1976; Jensen, 1986). In addition, firm's financial leverage is another relevant characteristic. If the debt level is low in relative terms, managerial discretionary behavior may result in lower operational efficiency (Demsetz, 1983; Jensen, 1986; Shleifer and Vishny, 1997; Ang et al., 2000; Fleming et al., 2005).

Research studies on asymmetric information theory indicate that this conflict from underinvestment. The information asymmetry present in the market allows managers to use internal information to their benefit, which may not necessarily be aligned with the objectives of the company and its owners. This practice could be linked to potential inefficiencies in asset utilization, which in turn lead to the reduced market value of the firms as well as lower credit quality (Ross, 1977).

International evidence has pointed out that ownership concentration, management compensation, internal monitoring policies, debt level and short-term debt function as mechanisms to control these conflicts and mitigate inefficient asset utilization (Ang et al., 2000; Fleming et al., 2005; Florackis and Ozkan, 2009). Research studies carried out in the Chilean market have indirectly shown that efficiency in asset utilization is related to financing policy and ownership structure (De Andrés et al., 2004; Azofra et al., 2004). However, this topic has not been explicitly investigated in Chilean companies.

The Chilean context offers an interesting space to analyze this question. With respect to the ownership structure, small firms are characterized by ownership structures concentrated on owner/manager where there would be no conflicts between control and ownership. This fact would be consistent with higher operational efficiency. While large firms, the ownership is diluted and the manager would be outsider, which according to Jensen and Meckiling (1976) would cause low performance. However, the manager of large firms is usually appointed by the controlling shareholder and may act under maximizing profits principle even when the ownership is diluted. Regarding capital structure, its control effect would substitute the weak legal protection for investor of the Chilean market.

The main objective of our study is to determine the effects of corporate and capital structures on the operational efficiency of Chilean companies. Our research contributes to the empirical literature in two main ways. First, we have quantified the effect of corporate structure, measured by ownership structure and managerial discretion, on operational efficiency. This allowed us to visualize how managerial discretional behavior interacts with different ownership structures and company sizes. Second, the effects of capital structure on operational efficiency were examined in order to verify if financing policy is an effective means of external control that mitigates the potential loss of operational efficiency in Chilean companies.

We examined a sample of 20.586 firms extracted from the Longitudinal Business Survey (hereinafter LBS) for the years 2007, 2009, 2013, and 2015. The results indicated that ownership structure has different effects on small and large firms. First, ownership concentration increased operational efficiency in small firms. This fact blocks the entry of new external investors into the ownership structure of these firms as ownership dilution would reverse the effect on operational efficiency. These results are important in a country like Chile, where legal protection for investors is low and the possibilities of wealth expropriation from external investors are significant. Second, ownership dilution increases operational efficiency in large companies. This result is similar to those found by Demsetz (1983). In addition, financing policy had a positive effect on operational efficiency. This result demonstrates that capital structure is an effective means of external control that drives operational efficiency and also has the capacity to mitigate the negative effects of ownership dilution.

These results are relevant for different types of investors. Given that external managers' management favors the operational efficiency of larger companies, the participation of external investors in these companies is encouraged. In addition, bondholders and banks exercise a means of control capable of counteracting the negatives effects ownership structure and managerial discretion have on operational efficiency. This fact allows funders to identify companies in which the risk of their investment is lower and their wealth is not expropriated due to the inefficient use of business assets. Our results are also relevant for those designing public policy aimed at improving the competitiveness and long-term survival of companies.

The structure of this study is as follows. In section 2, we outline a literature review examining the effects of ownership structure, managerial discretion and capital structure on operational efficiency. Research hypotheses are also presented in this section. In section 3, we present the variables and econometric methodology while, in section 4, we present the main results of our research. Finally, in section 5, we discuss the main conclusions and possible applications of this paper.

THEORETICAL FRAMEWORK AND HYPOTHESIS

Role of ownership structure on operational efficiency

Several theoretical and empirical studies have focused on agency conflicts. Although such conflicts are partially responsible for the weakening and rejection of the hypotheses set out by Modigliani and Miller (1958, 1963) and the fragmentation of capital structure, these developments mainly pertain to their relationship with company ownership structure and corporate governance.

Berle and Means (1932) were the first to propose a hypothesis for the modern corporation, characterized by ownership and control dilution. These authors argued that the firm's managers take advantage of capital dissemination, as well as the costs of information and control, in order to act on their interests through opportunistic behaviors that translate into reduced operational efficiency. Jensen and Meckling (1976) and Jensen (1986) added that the more diluted a firm's ownership, the greater the agency costs and the less efficiently the business uses its assets.

Jensen (1986) added that this lower efficiency has a more pronounced effect on large firms, where the degree of ownership separation and corporate management is greater. In these cases, it is very likely that managers will not participate in corporate ownership. On the contrary, in small firms, ownership structure may be partially or totally concentrated on the manager.

For small firms, most empirical studies have supported ownership dilution as a determinant of lower operational efficiency. Ang et al. (2000) performed a study on a sample of 1.708 small companies obtained from the National Survey of Small Business Finances (NSSBF) in the United States. Their results indicated that operational efficiency is significantly lower when the firm's manager is an outsider and ownership is diluted. In other international empirical studies, such as those elaborated by Shleifer and Vishny (1986), Stulz (1990), Leech and Leahy (1991), Short (1994), Salas (1999), Singh and Davidson (2003), Fleming et al. (2005), Gul et al. (2012), and Gogineni et al. (2016) among others, similar results were found that reinforced the role of ownership concentration on the mitigation of agency costs and as a driver of operational efficiency. In Chile, there are no empirical studies analyzing the role of ownership concentration/dilution on operational efficiency in small firms. Therefore, we proposed the following hypothesis:

H1: In small firms, ownership dilution has a negative effect on operational efficiency.

For large firms, there are studies, such as those conducted by Demsetz (1983) and Demsetz and Villalonga (2001), which contradict the traditional view that agency costs and reduced operational efficiency are associated with ownership dilution. These authors argue that in large firms, even if managers have low or no ownership participation, they will act towards profit maximization as disciplining forces reduce their private profitability. In the Chilean market, Paredes and Flor (1993) analyzed the ownership structure of stock exchange-listed firms. Their empirical results suggest that ownership structure is consistent with profit maximization, which goes against the notion that ownership dilution is related to poor performance. Thus, we proposed the following hypothesis:

H2: In large firms, ownership dilution has a positive effect on operational efficiency.

Role of managerial discretion on operational efficiency

Managerial behavior could also affect operational efficiency. Hayibor et al. (2011) point out that managerial behavior is a mechanism for signaling his or her ability to competitively manage the business. Winfrey and Logan (1998), Stanwick and Stanwick (2003) and Wade et al. (2006, 2008) added that these signals are related to the levels of credibility that they transmit to different stakeholders.

Ownership dilution (Berle and Means, 1932; Jensen and Meckling, 1976) and information asymmetry (Myers and Majluf, 1984; Ross, 1977) present in the market are factors that favor opportunistic or discretionary behavior, which could negatively affect operational efficiency. However, from the perspective of agency theory, Miller (2011) argued that the effect of managerial discretionary behavior on operational efficiency and agency costs depends on the stringency with which various external and internal monitoring mechanisms regulate manager behavior. This reflects the fact that managerial discretion could have a positive or negative effect on operational efficiency.

When external and internal monitoring measures effectively control the firm's top-level management, managerial discretion has positive effects on operational efficiency. Externally, Morck et al. (1989) point out that external stockholder effective supervision can mitigate managerial discretionary behavior. In their opinion, this limits the likelihood of the manager's dismissal and increases operational efficiency. Internally, Shleifer and Vishny (1997), Denis and McConell (2003) and Balkin (2008) point out that the owners, and even the company's management, can also act as an internal monitoring tool, disciplining managers and mitigating their discretionary behavior. Overall, strictness of manager supervision increases operational efficiency and reduces agency costs. Conversely, Miller (2011) points out that, if these supervisory measures are weak and ineffective, managers will act discretionally and reduce operational efficiency. Ross (1977) and Jensen (1986) point out that this type of behavior would only take place if ownership is sufficiently diluted or if there are high information asymmetries that would conceal this behavior. Empirically, Stanwick and Stanwick (2003) and Wade et al. (2006, 2008) point out that these discretionary behaviors would reduce the firm's operational efficiency. In Chile, there is no evidence in this area. Therefore, we proposed the following hypothesis:

H3a: Managerial discretion has a positive effect on operational efficiency.

H3b: Managerial discretion has a negative effect on operational efficiency

Role of capital structure on operational efficiency

Capital structure can affect operational efficiency through debt level, debt maturity and commercial relationship with funders.

From the debt level perspective, Jensen (1986) pointed out that companies use debt issuance to mitigate manager discretion and expose them to external monitoring. As a result, firms increase their operational efficiency and reduce the costs related to the separation of control and ownership. Several international studies have corroborated that operational efficiency is driven by the issuance of debt (Berger et al., 1997; Ang et al., 2000; Li and Cui, 2003; Fleming et al., 2005; Mohd et al., 2012; Rakesh and Lakshmi, 2013). However, they also emphasize that this effect is not permanent, due to the progressive increase in bankruptcy costs associated with greater indebtedness.

In Chile, there are studies that have indirectly supported these empirical results. Azofra et al. (2004) and De Andrés et al. (2004) pointed out that debt issuance is an appropriate mechanism to reduce operational inefficiency and manager incentive to follow non-optimal investment policies. Given the above, we proposed the following hypothesis:

H4: The firm leverage has a positive effect on operational efficiency.

Another aspect that associates operational efficiency with business financing policy is debt maturity. Barclay and Smith (1995, 1996) point out that firms shorten debt maturity to impose debt repayment on the business and its management as a priority over non-optimal investments. This measure is in line with the arguments of Jensen (1986) and leads to increased operational efficiency in asset utilization. According

to several authors, short-term debt increases operational efficiency because they reduce investor risk, an aspect that substitutes more restrictive covenants in debt contracts (Leland, 1998; Cuñat, 1999; Lasfer, 1999; Datta et al., 2005; Jiraporn and Tong, 2008; Alcock et al., 2011). At the national level, there is partial evidence that implicitly supports these results (Azofra et al., 2004; De Andrés et al. 2004). More recently, Castañeda and Contreras (2017) demonstrate that firms' debt maturity decreases in response to agency conflicts and potential reductions in operational efficiency associated with an increased degree of separation between ownership and corporate control. Given the above, we formulated the following hypothesis:

H5: Short-term debt has a positive effect on operational efficiency.

A third area related to financing policy is the duration of the commercial relationship with funders. Sass and Gisser (1989), Ang et al. (2000) and Fleming et al. (2005) add that the longer a firm's relationship with investors, the greater its operational efficiency. These authors explained that this occurs because company management is exposed to investor monitoring and reduced discretionary behavior. These results are consistent with Jensen (1986).

However, Rakesh and Lakshmi (2013) oppose these findings because a more extensive relationship would also impose greater conflicts with investors. On this point, Ang et al. (2000), and Fleming et al. (2005) point out that marginal monitor efficiency decreases due to the generation of a "free-rider" in corporate supervision activity. This would imply a non-linear effect of external monitoring on operational efficiency, thus explaining both views. Finally, the hypotheses related to this aspect of financing policy are:

H6a: External monitoring has a positive effect on operational efficiency.

H6b: The effect of external monitoring on operational efficiency is non-linear.

DATA AND METHOD

Data sample

The data used in this study were obtained from the Longitudinal Business Survey (LBS) developed by Chilean Ministry of Economy, Development and Tourism. The survey was published in four versions: LBS1, LBS2, LBS3 and LBS4, which contain qualitative and quantitative information on Chilean firms for the years 2007, 2009, 2013 and 2015, respectively. The data was organized in cross-section structure.

Table 1 presents the variables used in this study. Based on all the information contained in the different versions of LBS, we compiled a set of relevant information, which was mainly of an accounting, financial and administrative nature. It should be noted that the LBS does not provide market information. The total sample is composed of 20.586 Chilean companies of different structures and sizes, distributed as follows: 6.647 firms in LBS1; 3.882 in LBS2; 4.190 in LBS3; and 5.867 in LBS4. We eliminated companies with incomplete records and companies in the financial intermediation sector.

Our dependent variable is asset turnover ratio (AT). Ang et al. (2000), Fleming et al. (2005) and Gogineni et al. (2016) pointed out that this measure of operational efficiency in asset utilization is widely used to quantify non-optimal investments. According to agency theory, companies with higher agency costs are less efficient in the operational use of their assets (Jensen, 1986). For this reason, we used asset turnover ratio as a measure of operational efficiency.

Corporate structure was measured using ownership structure (OS) and managerial discretion (MD). The ownership structure variable was measured using four different variables. The owner/manager dummy variable adopts a value of 1 when the manager owns 100% of the firm's equity and 0 otherwise; business associated manager adopts a value of 1 when the manager has partial ownership in the company (technically between 1% and 99% of the assets) and 0 otherwise; manager ownership is the percentage of manager participation with partial ownership; and outside manager is a dummy variable that takes on a value of 1 when the manager has no participation in corporate ownership. According to agency theory, ownership structure (OS) allows the effect of ownership concentration and ownership dilution on operational efficiency to be quantified (Short, 1994; Singh and Davidson, 2003; Fleming et al., 2005; Gul et al., 2012). Technically, this variable is used as a form of monitoring or internal control over the firm's decisions.

The managerial discretion (MD) variable, measured using the previous dismissal dummy variable, will be used to gauge managerial discretionary behavior

Table 1. Categories and variable measurement. Source: Own elaboration.

Variable	Definition
A. Operational efficiency	
Asset turnover (AT)	Annual sales to total assets ratio
B. Growth opportunities	
Sales growth (GO)	Annual sales growth
C. Ownership structure (OS)	
Owner/manager	Dummy 1 if the manager is the total owner and 0 otherwise
Business associated manager	Dummy 1 if the manager is an associate manager and 0 otherwise
Manager ownership	Equity share of business associate manager
Outside manager	Dummy 1 if the manager is an outsider (non-owner) and 0 otherwise
D. Managerial discretion	
Previous dismissal (MD)	Dummy 1 if the manager was fired from his previous managerial job.
E. Financing and external monitoring	
Debt to equity (LEV)	Total debt to equity ratio.
External monitoring (EM)	Length of the relationship with external funders
Debt maturity (DM)	Short-term debt to total debt ratio.
F. Other control variables	
Firm size (SIZE)	Natural logarithm of total assets in million pesos
Holding (HD)	Dummy 1 if the firm belongs to a holding company and 0 otherwise.
Z Score (FQ)	Financial solvency indicator

on operational efficiency. Wade et al. (2006, 2008) and Hayibor et al. (2011) argued that managers who show discretionary behavior – either from previous firms or at their current company – reduce efficiency. However, Stanwick and Stanwick (2003) show that this effect can be reversed if internal control mechanisms mitigate this discretionary behavior. This implies that this variable could have either a positive or negative effect on operational efficiency.

The variables associated with leverage (LEV), external monitoring by funders (EM) and debt maturity (DM) are used as external control mechanisms on operational efficiency. Several studies have used these measures, such as Barclay and Smith (1995, 1996), Ang et al. (2000), Harvey et al. (2003), Fleming et al. (2005), Mohd et al. (2012) and Rakesh and Lakshmi (2013).

We used annual sales growth to measure company growth opportunities (GO). Jensen (1986), Ang et al. (2000) and Gul et al. (2012) argued that growth opportunities mitigate the effect of non-optimal investment decisions on operational efficiency. Usually, these growth opportunities are measured by variables such as Tobin's Q or the price-to-earnings ratio, but the LBS does not provide market data for its computation. In any case, Danbolt et al. (2011) note that accounting indicators of actual returns such as ROA or ROE, including annual sales growth, are positively and significantly correlated with measures of future company growth. This justifies the use of this proxy.

Several authors argue that other control variables on operational efficiency are firm size (SIZE), measured by the natural logarithm of the firm's total assets (Yermack, 1996; Cho, 1998; Daines, 2001; Offenberg, 2012); the firm's credit quality (FQ) measured by Z-Score index (Flannery, 1986; Diamond, 1991); and the dummy variable that measures the firm's belonging to business holdings (HD).

ECONOMETRIC METHODOLOGY

To estimate the effects of corporate and capital structure on operational efficiency in Chilean companies, we used an instrumental variable regression model (IV). The empirical model is as follows:

$$\begin{aligned} AT_i = {} & \beta_0 + \beta_1 DSIZE_i + \beta_2 OS_i + \beta_3 \left(OS_i \times DSIZE_i \right) + \beta_4 MD_i + \beta_5 \left(MD_i \times DSIZE_i \right) \\ & + \beta_6 LEV_i + \beta_7 DM_i + \beta_8 EM_i + \beta_9 EM_i^2 + \beta_{10} GO_i + \beta_{11} FQ_i + \beta_{12} SIZE_i \\ & + \beta_{13} SIZE_i^2 + \beta_{14} HD_i + \beta_{15} Dyear_t + \beta_{16} DSector_i + \varepsilon_i \end{aligned} \quad (1)$$

Where AT_i indicates the asset turnover ratio representing operational efficiency from company *i*. OS_i is a variable that measures ownership structure, defined by the four variables described in table 1. $DSIZE_i$ is a dummy variable that adopts the value of 1 if the firm is defined as small company. The variable MD_i corresponds to managerial discretion, LEV_i measures the company's capital structure using the debt to equity ratio and DM_i is short-term debt. EM_i is the variable that measures external monitoring carried out by funders and EM^2 is the variable that measures the non-monotonic effect of external monitoring.

Other control variables include GO_i representing growth opportunities. FQ_i is the firm's credit quality, $SIZE_i$ measures company size and the squared size $SIZE_i^2$ captures the non-monotonous effect of size on operational efficiency. Finally, HD_i is a dummy variable that takes on a value of 1 if the company belongs to a business holding and 0 if it does not.

According to Jensen (1986) and Fleming et al. (2005), the application of the instrumental variable estimator is justified by the endogeneity that exists between asset turnover (AT_i) and the business' debt level (LEV_i). According to empirical evidence, the relationship between these variables is simultaneous. So, firms with higher operational efficiency have more leverage, and this leverage decision depend of operational efficiency degree. To correct this endogeneity problem we used the current liquidity (LIQ_i), measured by current assets to current liabilities ratio, and assets tangibility ($TANG_i$), measured by long-term assets to total assets ratio, as instruments for IV estimator. These instruments are significantly related to leverage decision, but its correlation with OLS residuals was not significant. In both stages of creating the estimate, we differentiated the economic sector, year and kind of firms (Open equity, close equity, limited liability, individual limited liability, natural person). In addition, the robust variance estimator was applied in order to correct heteroskedasticity patterns.

EMPIRICAL RESULTS

Descriptive analysis

Table 2 shows the descriptive statistics of the data. It is important to note that the LBS sample design increased the participation of large firms from LBS1 to LBS4.

Descriptive results show that operational efficiency in asset utilization has steadily decreased from LBS1 to LBS4. Along this same line, growth opportunities were shown to exhibit similar behavior. The increased participation of large companies in the sample composition could influence the evolution of these averages. In fact, a growing proportion of businesses belong to corporate holdings, which, in turn, are larger.

In LBS1, the percentage of companies managed by the owner decreased from 35.71% to 12.51% in LBS4, while those managed by an outside manager increased from 27.23% to 57.80%. From 2007, the proportion of companies managed by an owner fell by 14.07% in 2009, by 17.56% in 2013, and 23.20% in 2015. In addition to the above, we observed reduced managerial participation in firm ownership; figures ranged from 52.58% of the equity in LBS1 to 26.47% in LBS4. This aspect is empirically related to less concentrated ownership structures where the potential weakness of monitoring mechanisms could explain the progressive reduction in asset turnover.

The managerial discretion measure for the year 2007 indicates that 5.86% of current managers were dismissed from their previous managerial positions. This occurrence, related to a history of managerial discretionary behavior, was mainly observed in small firms, where information asymmetry is greater. This figure gradually declines towards 2015, when only 1.15% of managers were previously dismissed.

Table 2. Descriptive Statistics. Source: Own elaboration.

Variable	2007		2009		2013		2015	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
A. Operational efficiency								
Asset turnover (AT)	4.22	5.01	2.68	4.78	1.97	4.79	1.23	3.09
B. Growth opportunities								
Sales growth (%)	22.83	30.68	14.90	33.86	16.78	31.49	11.06	32.47
C. Ownership structure								
Owner/manager (%)	35.71	49.60	21.64	41.21	18.15	38.54	12.51	33.09
Business associated manager (%)	38.04	48.66	41.05	49.29	36.63	48.18	29.67	45.68
Manager ownership (%)	52.58	28.29	50.80	27.94	35.45	41.43	26.47	38.46
Outside manager (%)	27.23	45.85	38.29	47.47	45.19	49.77	57.80	49.39
D Managerial discretion								
Previous dismissal (%)	5.86	22.49	2.89	12.64	1.51	12.21	1.15	10.36
E. Financing and external monitoring								
Debt to equity	1.45	2.14	1.52	2.13	2.09	2.56	3.88	4.06
Monitoring by external funders	12.82	12.54	12.65	10.16	16.33	11.56	18.17	13.98
Short-term debt (%)	83.36	28.81	82.99	28.16	80.28	28.96	77.27	30.25
F. Other control variables								
Firm size (logarithm total assets)	23.74	26.55	25.73	27.43	25.85	27.25	28.89	25.95
Holding (%)	13.57	34.25	21.52	41.10	29.37	45.55	31.69	46.53
Z Score	5.74	5.21	3.59	3.25	3.74	4.19	6.90	3.97

Regarding capital structure, Chilean companies mostly borrow as a means of financing. Short-term debt is undoubtedly predominant in external financing, although its relative weight in financing decreased from 83.36% in 2007 to an average of 77.27% in 2015. Furthermore, the relationship with external funders lasted between 12 and 18 years, on average.

As for credit quality, the Z Score had levels above 2.11. This fact reveals that, on average, Chilean companies have a low probability of bankruptcy. Additionally, the percentage of companies that belong to business holdings increased from 13.57% in LBS1 to 31.69% in LBS4. This fact is explained by the greater participation of large firms in sample composition beginning with LBS2.

ECONOMETRIC ANALYSIS

In this section, we discuss the effects of corporate and capital structures on operational efficiency. Table 3 presents the results of the econometric model indicated in (1). It shows that we applied the instrumental variable estimator due to the endogeneity caused by leverage (LEV_i). This variable was instrumentalized by current liquidity (LIQ_i) and asset tangibility ($TANG_i$). The Sargan over-identification test confirmed the validity and exogeneity of the selected instruments. In addition, the estimate employed robust variances to correct the potential loss of efficiency over parameters associated with heteroskedasticity.

Table 3 shows that ownership structure (OS_i) has different effects on operational efficiency. We observed that when an owner manages the firm,

Table 3. Instrumental variable regression for operational efficiency.

Variable	*Dependent variable: Operational efficiency measured by asset turnover ratio*		
	Column 1	Column 2	Column 3
Corporate structure variables			
DSize	0,2893***	0,2905***	-0,0650
	(2,58)	(3,00)	(-1,34)
Owner/manager	0,2478**		
	(2,30)		
Owner/manager × DSize	0,3610**		
	(2,51)		
Business associate manager		-0,2211**	
		(-2,48)	
Business associate manager × DSize		-0,1424***	
		(-3,53)	
Manager ownership		0,1727***	
		(4,06)	
Manager ownership × DSize		0,3153**	
		(2,55)	
Outside manager			-0,0541
			(-1,33)
Outside manager × DSize			-0,1922**
			(-2,25)
Managerial discretion variables			
Managerial discretion	0,9184	1,0017	1,0108
	(0,64)	(0,70)	(0,71)
Managerial discretion × DSize	-1,0802	-1,1906	-1,1881
	(-0,75)	(-0,82)	(-0,82)
Capital structure variables			
Leverage	0,7902***	0,7890***	0,7873***
	(9,36)	(9,35)	(9,38)
Short-term debt	0,5854***	0,5915***	0,5872***
	(3,50)	(3,53)	(3,52)
External monitoring	0,0597***	0,0600***	0,0603***
	(5,89)	(5,90)	(5,97)
External monitoring squared	-0,0004***	-0,0004***	-0,0004***
	(-4,10)	(-4,12)	(-4,18)
Others control variables			
Growth opportunities	0,0002	0,0002	0,0002
	(0,54)	(0,54)	(0,55)
Firm quality	0,4242***	0,4241***	0,4236***
	(36,72)	(36,78)	(36,92)
Size	-0,3957***	-0,3819***	-0,4032***
	(-3,17)	(-3,06)	(-3,45)

Size squared	0,0089**	0,0085*	0,0090**
	(2,03)	(1,91)	(2,12)
Holding	-0,3969***	-0,3758***	-0,3789***
	(-3,02)	(-2,81)	(-2,84)
Const.	0,5877	0,4848	0,5533
	(0,63)	(0,53)	(0,63)
Wald	(77,50)***	(82,69)***	(99,91)***
Adjust. R-Square	0,47	0,45	0,49
Dummy sector	Yes	Yes	Yes
Dummy year	Yes	Yes	Yes
Dummy kind of firms	Yes	Yes	Yes
Sargan test	(43,02)	(40,79)	(39,75)
Sample	20,586	20,586	20,586

Superscripts ***, **, * indicate statistical significance at 1, 5, and 10 percent, respectively. Source: Own elaboration.

operational efficiency increases significantly. In contrast, if the company is managed by a manager with partial ownership, operational efficiency declines. These effects are significant. Finally, we observed that there is a positive and significant relationship between managerial ownership and operational efficiency. For small firms, the iterative variables (*Owner/manager* $\times$ *DSize*) and (*Manager ownership* $\times$ *DSize*) have a positive and significant effect on operational efficiency. Even the variables (*Business associated manager* $\times$ *DSize)* and (Outside manager $\times$ DSize) have a negative and significant effect on operational efficiency. These results indicate that the ownership dilution has a negative effect on operational efficiency. So, these results support the hypothesis H1. These results are consistent with the empirical results of previous research (Ang et al., 2000; Singh and Davidson, 2003; Fleming et al., 2005; Gul et al., 2012; Gogineni et al., 2016).

For large companies, we observed that the variable (Outside manager $\times$ DSize) has a negative and significant effect on operational efficiency. So, when the large firms are managed by outside managers, the company's operational efficiency increases. This result corroborate the hypothesis H2 and is similar to those obtained by Demsetz (1983), Paredes and Flor (1993) and Demsetz and Villalonga (2001). In this kind of firms, the managers act according to maximizing profit principle because the wealth expropriation has a higher cost for them. This manage is aligned with the controlling shareholders interest.

Regarding managerial discretion (MD_i), we observed that this variable has not significant effect on operational efficiency. So, there isn't evidence that support the hypothesis H3a or H3b.

Financing policy was found to have significant effects on operational efficiency. First, we observed that leverage (LEV_i) had a positive effect on operational efficiency, significant at 1%, which validates hypothesis H4. This result is similar to those found in several international studies and demonstrates the hypothesis of control (Ang et al., 2000; Li and Cui, 2003; Fleming et al., 2005; Mohd et al., 2012; Rakesh and Lakshmi, 2013). This is because debt acts as a check on company managers, promoting the efficient use of investments in assets.

Second, the issuance of short-term debt reinforces the effect of indebtedness on operational efficiency. We observed that short-term debt (DM_i) had a positive effect on operational efficiency significant at 1%, which provides evidence that supports the hypothesis H5. In accordance with the findings of international studies, short-term debts result in increased operational efficiency in meeting payments and mitigating the risk of bankruptcy (Lasfer, 1999; Datta et al., 2005; Jiraporn and Tong, 2008; Alcock et al., 2011).

Third, the length of the business relationship with external funders (EM_i) has a positive and significant impact on operational efficiency, a result that supports hypothesis H6a. The permanent and prolonged exposure of corporate management to supervision

of external funders boosts operational efficiency and reduces investor risk. However, the described effect is non-linear (EM^2), which shows that the effectiveness of external supervision decreases marginally and confirms the existence of the "free-rider" problem on the marginal monitor. This result confirms hypothesis H6b.

Finally, company size has a negative effect on operational efficiency. According to Cho (1998), Daines (2001) and Offenberg (2012), this result reflects the fact that firms face greater corporate inefficiencies the larger and more complex they become. In addition, this effect is non-linear, as the effect of size is positive for small firms and negative for large firms.

Other results demonstrated the null effect of growth opportunities (GO_i). On the other hand, the company's credit quality (FQ_i) had a positive effect on operational efficiency, while corporate holding (HD_i) had a negative impact.

CONCLUSIONS AND DISCUSSION

Operational efficiency is a highly relevant topic in the field of corporate finance. Various international studies have detailed some factors that influence how firms use their assets to generate sales and revenue. In Chile, although there are studies that indirectly indicate how certain factors could influence operational efficiency, none have directly analyzed their potential effect and none have employed a sample of small and medium companies, concentrating only on those listed on the stock exchange.

This study provides evidence indicating which variables drive operational efficiency in Chilean companies. One of these factors is corporate structure. The results of this work suggest that the opposing views of Jensen and Meckling (1976) and of business value maximization formulated by Demsetz (1983) operate in parallel within Chilean firms. However, their effects differ depending on firm size.

In small firms, ownership dilution and lower levels of manager ownership significantly reduce operational efficiency. In such companies, Jensen and Meckling's (1976) approaches are valid and operational efficiency only increases when the owner manages the firm. These results have two important implications for this type of company in Chile. First, the positive relationship between total ownership concentration and operational efficiency in this type of firms is because the company's owner-manager has internal control over investment decisions and corporate management. This blocks the entry of new external investors into the ownership structure of these companies as ownership dilution would reverse the effect on operational efficiency. Second, these results are important in a country such as Chile, where legal protection for investors is low and the possibilities of wealth expropriation from external investors are significant. Even when ownership structure is diluted, the loss of efficiency is strengthened by outside managerial discretional behavior. All of these facts constitute a permanent disincentive for external investment, which reduces prospects for growth and development as well as a small business' ability to obtain financing in Chile.

For large firms, operational efficiency only increases when an outside manager runs the firm. In this case, the theories set out by Demsetz (1983) are applicable. In Chile, large companies are usually organized as open equity companies, where controlling shareholders have the power to appoint the firm's manager and its directors. In this way, the company's top management is aligned with the controllers' interests and maximizes the value of their wealth invested through higher operational efficiency. However, this does not mean that their decisions reflect the non-controlling shareholders' interests, to whom it is possible to expropriate wealth.

Financing policy is an effective monitoring and control mechanism, as it promotes operational efficiency. Short-term debt and higher debt levels increase asset turnover in Chilean companies. In addition, a longer business relationship between the company and external funders is an effective means of supervision that reinforces the positive effect of debt. However, in the latter case, the existence of the "free-rider" problem for marginal funders weakens the effect on operational efficiency. These results demonstrate that capital structure is an effective means of external control that drives operational efficiency and has the capacity to mitigate the negative effects of ownership dilution and managerial discretion. For banks and bondholders, these results are important as the funds that these investors provide to Chilean companies force them to generate higher flows from sales and, thus, cover financing costs.

Based on these results, the effects of corporate and capital structure on operational efficiency can be better understood. However, the inability to identify individual

firms in the different surveys did not allow data to be presented through panel data structure. As a result, we could verify if there were other non-observable factors that could affect operational efficiency. In addition, we left open the discussion on this subject. In fact, in 2010, Chile joined the OECD, an organization that established a series of measures to be implemented in business, public and economic policies. Future research should analyze the impacts of the corporate governance practices recommended by OECD on the operational efficiency of Chilean companies.

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