DOES A LOAN FOR OWN CUSTOMERS MAKE SENSE?

EMPIRICAL EVIDENCE FROM THE USA

by

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Abstract

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This paper investigates the issues connected with one of accounts receivable policies: formation of financial subsidiary by parent company in order to provide loans for own customers to buy its products. Such type of financial policy leads to changes in the company's capital structure and accompanied by important economic features. Results suggest that captive finance subsidiary is most likely to be afforded by large companies with significant amount of accounts receivable on the balance sheet. In addition companies can manage their volatility of sales by using discrimination price policies, which itself raises possibilities to optimize production cycle and gain more profits. At the last stage this research investigates the issue of the 2008-2010 financial crisis reflection on the shares price. The analysis shows that stock prices of companies with captives were hit relatively more than the other firms, even if such companies more profitable than others during bad times. This can be explained that the presence of a captive subsidiary moves parent company closer to the financial nature, and, particularly, financial companies were severely tumbled by the recent financial crisis.

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INTRODUCTION

Under tight market conditions each company literally has to fight for each customer. And the way of doing this depends on a lot of factors, such as a size of the company, ability to get debt at low rates, the level of technologies, etc. Someone wins buyer's confidence by offering better quality, someone else by proposing a more attractive price. But there are also companies which offer favorable credits conditions to their own buyer's in order to encourage them to buy companies' products. Anyway, almost each company uses a method of such trade credit in a form of accounts receivable, for example, when a regular customer pays for his purchases for some period after getting a product. Since the share of accounts receivable in the total assets is, on average, 23.4% in the U.S.A for concerned period and, particularly, 21.4% in 2010 year (according to the COMPUSTAT data), often receivables have a significant impact on cash flows. Therefore, it is worthwhile drawing special attention to this kind of issue. Mian and Smith (1992) distinguish the following policies for accounts receivables: launch a captive finance subsidiary, the issue debt which is secured by account receivable, use factoring (sale of accounts receivables for cash payment), make an agreement with a credit-reporting firm or a credit-collection agency, or buy a credit-insurance policy. Each policy method has its own pros and cons, but in this study I want to consider those companies which expand their client base by setting up a captive finance subsidiary. According to Banner (1958) a captive subsidiary is set by nonfinancial parent with the main objective of "to underwrite" of the sale of the parent company's products and is therefore influenced in its actions and policies by merchandising requirements, not by objective monetary standards and credit conditions". Since setting a finance

subsidiary is accompanied with substantial costs, mainly large companies could afford this instrument to improve their efficiency. For example, it is difficult to imagine such industry as distribution of automobiles without loans on vehicles. Financial subsidiaries have been used in this industry since 1900x. Also the captive's proceeds could be used for purchasing the expensive installation equipment in agriculture, in which, as is widely known, has always been the scarcity of cash on hands. By offering more attractive credit conditions firms could take a much bigger market stake, according to Banner (1958). Mian and Smith (1992) noticed other advantages of captives such as the possibility of effective price discrimination, which itself could also expand market share. According to Emery (1987) companies with substantial seasonality of their business and, as a consequence, with fluctuation in their sales, can apply their credit policy to cause clients to smooth their purchases into the low-active period. This creates a possibility of optimizing the company's production cycle and consequently saving the money on the cost of production.

An important issue concerning captives is related to the wealth expropriation from bondholders to stockholders. Kim et al (1977) made a special emphasis on capital rearrangement between bondholders and stockholders: since the parent companies create new borrowings, which have claims preferable to the old bondholders and, given that borrowings often secured by parent's account receivables, new claims significantly decrease the coverage of the senior bondholder claims (abuse of the first-me rule). That's why stockholders gains from such capital structure rearrangement.

In his recent paper Braurer (1983) also confirmed the same result. Malitz (1989) re-examined the overall idea about the capital structure, but in contrast to previous papers he found that a captive formation is followed by a significant increase in the firm value.

The quantity of captive financial subsidiaries more than tripled in the last four decades from 20 to 74 In the U.S.A. It is worthwhile mentioning that the most active growth of financial captives was from 1970 to 2000, whereas in the last decade the number of captives was flat.

Due to the formation of captives each company is endangered to the risks of debt non-payments. Thereby, such companies become more sensitive towards market risks and governmental decisions upon interest rates settings. Roberts and Viscione (1981) proved that after a captive creation firms can heavily build up their debts, thus the abovementioned risks are even more dangerous for a company's financial stability. Such companies acquire the features of financial organizations, being more exposed to financial risks and crises. Taking into consideration the fact that 2008-10 crisis has aroused due to the debt overhang, it's quite essential to suppose that the shares of companies with captives should have been fallen in prices more than other companies' shares.

All mentioned above allows us to develop the following testable hypothesis: (1) since a captive financial subsidiary requires significant investment and that investment can be obtained by a big company much more easy, large firms are more likely to set up such subsidiaries; (2) companies with captive subsidiaries have less volatile sales; (3) given that such firms have better repossession value and lower agency costs, those firms have higher profits; (4) since formation of a captive subsidiary exposes the parent company to financial risks, including market overreaction on perception of the future, the company's shares reflect financial crunch more deep than other companies.

Thus, this thesis will identify an actual link between a financial captive subsidiary and the overall effectiveness of the parent company. Also the thesis will reveal how such companies are doing in hard times and particularly in periods of a

crisis. In addition this research work overcomes selections bias, which was widely presented in the previous works, by using different treatment regressions. After the beating self-selection bias all results will be of much more significance.

The paper is structured into the next sections. The literature review is presented in the next chapter; it describes the current situation and represents comparison with the recent results. The literature review is followed by the methodology discussion. All variables are described in the data section. It is followed by the discussion of the results obtained. Conclusions and further investigation ideas are presented in the last chapter. All the tables are in the Appendices A – B.

LITERATURE REVIEW

The theoretical article written by Lewellen (1972) argues about a negative effect on credit standing of a company, thus it is difficult to find substantial support points for establishing a captive subsidiary. Given that with a captive subsidiary firm's leverage increases, the probability of default can only rise, which can lead to windfall gains for stockholders relatively to bondholders. The author also captures managerial implication of launching a captive subsidiary and argues that such move steams only capital structure benefits, but not the improvement in firm's productivity.

The paper by Barron et al (2004) presents a theoretical model, which explains why captive subsidiaries are softer in terms of offering lower rate credits than banks for durable goods, when the financial market segmented into different credit institutions and captive finance subsidiaries. The reason relies on the risk that could afford captives due to asymmetric information about customer's creditworthiness. Also profits from higher sales cover losses from low rate credits.

Banner (1985) noticed that attractive credit conditions could be even more powerful weapon than an attractive price. His other important idea is that captive finance is an instrument preferably for big companies. Large firms, due to a nice credit status, a famous name and a good reputation, have better access to financial markets and may borrow at the attractive interest rate (short-term and long-term contacts), that's why, they can provide better financing conditions to customers. The author also claims that such type of financing gives an access to a

bigger amount of funds. In addition, a captive subsidiary has significantly lower costs at screening customers due to the fact that firm is a specialized lender. Since a company often has much superior knowledge about its own clients than other credit institutions, screening can be made at lower costs. As an excellent example Banner gives automobile industry.

Also in the other paper Litov (2011) empirically suggests that formation of a captive lowers excess debt leverage and excess maturity in nowadays conditions due to small incentives to screen on the part of financial subsidiaries.

Kim at al. (1977) provided the link between captive financial subsidiaries and "first me rule" (bondholders' protection from the risk of stockholder's side). Formation of a captive subsidiary is often guaranteed by account receivables of the parent company. Given that creditors of a captive subsidiary have superior claims to the wealth produced by the sales, owned by the parent company, violation of "first me rule" leads to a substantial wealth transfer from bondholder to equity holders. Such changes in the capital structure "creates a new class of security holders with claims that are superior to those of the old bondholders".

Captive finance could be a powerful tool for smoothing sales between different periods. Emery (1987) in his theoretical paper claims that companies with substantial volatility in their sales should keep higher inventories during unpredictable high demand and low-demand periods over time. By changing credit conditions for own customers, the producer smoothes demand over the period, reduces the amount kept in his storehouse and decreases the costs connected with inventory carrying. Emery developed just theoretical paper and this study attempts to find empirical evidence of this idea.

Since several of previous researches do not count for endogeneity, this study wants to refresh most of the noticed results for the USA empirically with treatment effect models.

METHODOLOGY

Since information about captive subsidiaries is hand-collected, these results will probably have problems with self selection bias, and consequently with endogeneity. In general, a firm, which owns a captive, is the biggest in their field of activity. In addition, such firm doesn't often have a close competitor in terms of market capitalization. But this bias can be corrected by using treatment regressions, thus, in addition, to most of probit regressions and usual regressions there will be supplemented with two-step treatment regressions, in the regression that investigates stockholders' perception standard errors will be clustered at the firm level.

To answer the question whether large companies are more likely to establish a captive financial subsidiary, this study intends to run probit regressions with dummy as the dependent variable, which indicates whether the company has a captive in corresponding year, dummy equals one and zero if not. The right-hand-side variables are logarithm of Market capitalization, Book-to-Market Ratio, Growth of Sales, Cash-to-Assets, Capital Expenditures to Assets, Price-to-Earnings, Debt-to-Equity and Receivables-to-Assets. In order to control for industry peculiarities and time characteristic will be used fixed effects specification. In addition, clustering at the firm level for standard errors is going to be applied. The exact equation for this specification is:

$$CaptiveDummy_t = \alpha_0 + \alpha_1 \ln(Mktcap)_t + \alpha_2 Booktomarket_t + \alpha_3 Salesgrowth_t + \alpha_4 Cashtoassets_t + \alpha_5 Ca$$

Where t is time index and u is error term.

This thesis investigates the volatility of sales over time also. The dependent variable is a standard deviation of sales calculated quarterly over the 3 years. The explanatory variable of interest is a captive subsidiary dummy. Other variables are the following: logarithm of *Market capitalization*, *Book-to-Market Ratio*, *Growth of Sales*, *Cash-to-Assets*, *Capital Expenditures to Assets*, *Price-to-Earnings*, *Debt-to-Equity* and *Return on Equity*. Time and industry fixed effects are taken into account. In order to avoid overlapping estimations only every third year included into regression. The self-selection problem is accounted by treatment effects model. The exact equation for this specification is:

$$\mathbb{S}t.\,dev.\,sales\mathbb{]}_t = \alpha_0 + \alpha_1 \ln(Mktcap)_t + \alpha_2\ \mathbb{}Booktomarket\mathbb{]}_t + \alpha_3\ \mathbb{}Salesgrowth\mathbb{]}_t + \alpha_4\ \mathbb{}C$$

Where $St.\,dev.\,sales_t$ is a standard deviation of the *Sales*.

The OLS model with industry and time fixed effect will be used to account for profitability. The explained variables are Return on Equity and Return on Assets. The explanatory variable is a captive subsidiary dummy, a positive coefficient at this variable indicates that companies with captives are more profitable. And other variables that was in the previous probit regression. Treatment effect model with Heckman's two-step procedure will be attracted for fixing endogeneity problem with self-selection. The exact equations for these specifications are:

$$ROE_t = \alpha_0 + \alpha_1 \ln(Mktcap)_t + \alpha_2 Booktomarket_t + \alpha_3 Salesgrowth_t + \alpha_4 Cashtoassets_t + \alpha_5 Capextoassets$$

$$ROA_t = \alpha_0 + \alpha_1 \ln(Mktcap)_t + \alpha_2 Booktomarket_t + \alpha_3 Salesgrowth_t + \alpha_4 Cashtoassets_t + \alpha_5 Capextoassets$$

At the end this research paper investigates reaction of the company's shareholders to the recent financial crisis 2008-2010. The dependent variable is the yearly return of the shares or the percent change in market capitalization in one year. On the right-hand side: a captive subsidiary dummy, logarithm of

Market capitalization , Growth of Sales, Cash-to-Assets, Capital Expenditures to Assets, Price-to-Earnings, Debt-to-Equity ratios. The different variation of OLS with fixed, random effects and clustering of standards error at the company level are applied.

$$Yearlyreturn_t = \alpha_0 + \alpha_1 CaptiveDummy_t + \alpha_2 \ln(Mktcap)_t + \alpha_3 Salesgrowth_t + \alpha_4 Cashtoassets_t + \alpha_5 Cap\dots$$

Where $Yearlyreturn_t$ is the return made by the end of year *t*.

In order to look at the company profitability during the crisis, above related regressions to profitability will be used. Those regressions are constrained to the crisis time frame.

DATA DESCRIPTION

Since there are no official or other comprehensive databases on captives associated with the U.S. firms, all information related to formation a captive subsidiary by parent companies are hand-collected. The data about each company are supplemented by the information whether it has a captive unit at any point in time of company existence. COMPUSTAT data will be used for accounting characteristics. This is a database of the market and financial information about companies throughout the world.

As well to get the stock market data on prices and returns data will be obtained from the Center for Research in Security Prices (CRSP). Other data are directly obtained on the Internet sources and particularly from the parent's web-sites, rating agencies, such as Moody's Industrial Manuals and Mergent Web Reports, reports on the captive firms, financial articles in different specialized publications. Google and Yahoo are widely used to find some other information that wasn't discussed by the above sources.

The data cover the period from 1970 to 2010. As mentioned before the number of subsidiary captives has increased more than three times. The descriptive statistics is presented in Table A1, which indicates a substantial difference between companies which own a captive, and those which don't. Particularly, firms with captives tend to have lower volatility in sales, higher market share and better profitability. Also the descriptive statistic reflects that such firms have higher leverage than usual firms.

Consolidated financial information at the top level will be used for every test. In general, the parent company doesn't provide separate financial reports for a captive. However, some companies provide such an opportunity, but it would be inconvenient to use separated information because of a substantial difference in the accounting techniques.

Given that, in the discussed above literature similar variables collection were used, and leading by general intuition the following variables are to be used in tests: *Market Capitalization, Book-to-Market ratio, Capital Expenditures, Sales Growth, Cash, Price-to-Earnings Ratio, Receivable-to-Assets, Return on Equity and Assets, Debt-to-Equity Ratio, Market Share* and others. The comprehensive variable definitions can be found in the Table A3.

RESULTS

All the tables with estimated results can be found in the Appendix B. According to the estimated specification (1) with a simple probit model, a captive is more probable to be established by a company: with higher market capitalization (where the coefficient of *Log_mktcap* is 0.707 and significantly differs from 0) and with a higher receivables to assets ratio (where the coefficient is 0.373 and is also significant). The results are presented in the Table B1. The cash to assets ratio has a negative significantly different from 0 coefficient, which is logically consistent. The specification (1) with fixed time and industry effects gives much stronger results: the coefficients are 0.953 for *Log_mktcap* and 1.124 for *Rectoasset*. The coefficient for *Salesgrowth* is negative, which means that the companies with captives are mature and they are already at a steady pass.

The specification (2) gives an insight into the volatility of sales. In accordance to the usual OLS model the coefficient for *Captive* dummy is equal to -0.011 and significant at the 5% level (results are in the Table B2). The signs of the coefficients at *Salesgrowth* and at *Cashtoassets* are positive due to a straightforward dependence of volatility on those factors. The treatment model reveals the fact that the presence of a captive decreases the sale volatility by 3.5% other sings being equal. In addition, it is worthwhile to notice that the coefficient at *Capextoassets* is positive, which itself implies that investing in the capital expenditure gives result in form of the higher and, probably, consequently more volatile sales.

To answer the question whether the companies with a captive in their structure are more profitable specifications (3) and (4) are used (results are in the Table B3). The simple OLS regression implies that companies with a captive have, on average, return on equity higher by 1.7 % and return on assets doesn't depend on captive presence. However, the treatment regression produces somewhat stronger results: higher by 4.8% and 1.6% corresponding to return on equity and assets (outliers are dropped). The coefficients for *Capextoassets* are positive in each alternative of regression, which corresponds to theoretical predictions (equity holders receive money after capital expenditures are made).

In order to investigate the shareholders' perception of such corporate policy practices during bad time of the crisis 2008-10 the specification (5) is applied (results are in the Table B4). The usual OLS regression suggests that captive presence in the parent company structure decreases yearly return in the stock prices by 17.1% with the standard error equal to 0.088. in compliance with theory all control variables such *as Log_mktcap, Salesgrowth, Cashtoassets, Capextoassets* have a significant and positive influence on the stock performance. The OLS regression with fixed time and industry effects shows that captive presence strikes the stock price even more (by 22.2% with the high significance level). The coefficients of the controls variables are in line with initial expectations.

The restricted specifications (3) and (4) to the period of the financial crisis 2008-2010 provides information on returns on equity and assets during bad times (results are in the Table B5). The treatment regression indicates that the presence of a captive in the structure significantly raises the return on equity by 0.137 and increases return on assets by 0.052. These results contradict to the stock performance of such companies during the crisis.

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CONCLUSIONS

This paper investigates the economic features, which are obtained by a company via such accounts receivable policy as a formation of a captive finance subsidiary. In line with our initial hypothesis, the results suggest that creation of captive finance subsidiary is inherent for companies with a big market capitalization and high ratio of accounts receivable to assets. In addition, those companies effectively decrease dependence of their businesses on seasonality by using such price discrimination instrument as low interest rates on loans provided to their clients. Since these firms can better forecast their sales, they can optimize their production cycle; consequently, such practice reduces the costs related to inventory carrying. Taking as a base for analysis the COMPUSTAT data from 1970 to 2010 this research discovers that companies with a finance subsidiary, on average, have higher return on equity and return on assets. However, there is an issue with that: during unfavorable times of the financial crisis 2008-2010 the share prices of companies with captives dropped more deeply than others' ones, in spite of the fact that during the crisis they still earned more money for each invested dollar in assets or equity than the companies without captives. This result can be explained by the fact that the formation of a captive reshapes the parent company close to its financial nature. Significance of the above results is supported by applying treatment effect model. Thus, the conclusion is that formation of a captive finance subsidiary positively influences company's competitiveness, but exposures the company to financial risks.

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APPENDIX A

Table A1: Number of captives over time.

Year	Number of active captives	Percent of corporations	New captives	Dropped captives
1970	20	0.93%	1	0
1971	20	0.84%	0	0
1972	22	0.87%	2	0
1973	23	0.85%	1	0
1974	24	0.92%	1	0
1975	25	0.92%	1	0
1976	25	0.91%	0	0
1977	25	0.92%	0	0
1978	27	0.98%	2	0
1979	28	1.03%	1	0
1980	31	1.14%	3	0
1981	33	1.15%	2	0
1982	39	1.34%	6	0
1983	41	1.34%	2	0
1984	42	1.35%	1	0
1985	50	1.62%	8	0
1986	51	1.67%	1	0
1987	53	1.69%	2	0
1988	55	1.79%	2	0
1989	59	1.92%	4	0
1990	62	2.04%	3	0
1991	62	1.98%	0	1
1992	62	1.86%	1	1

Table A1: Number of captives over time.- Continued

Year	Number of active captives	Percent of corporations	New captives	Dropped captives
1993	65	1.75%	4	0
1994	68	1.48%	3	0
1995	69	1.39%	1	0
1996	69	1.33%	0	3
1997	71	1.35%	5	0
1998	73	1.45%	2	1
1999	74	1.56%	2	1
2000	77	1.66%	4	0
2001	78	1.74%	1	0
2002	79	1.74%	1	0
2003	80	1.77%	1	1
2004	81	1.79%	2	1
2005	81	1.82%	1	1
2006	82	1.84%	2	6
2007	77	1.76%	1	0
2008	77	1.90%	0	3
2009	75	1.82%	1	2
2010	74	1.83%	1	0

Table A2: Variable descriptive statistics.

|	Firms with captives		Firms without captives	
	mean	median	mean	median
Market Capitalization (millions of dollars)	16404.312	3229.386	1579.180	106.381
Book to Market	0.551	0.460	0.854	0.665
Sales Growth	0.109	0.086	0.187	0.103
Sales volatility	0.163	0.145	0.194	0.169
Cash	0.067	0.037	0.081	0.038
Capex	0.055	0.046	0.069	0.048
Price-to- Earnings	17.265	15.179	14.179	11.640
Debt-to-Equity	0.594	0.383	0.576	0.309
Debt-to-Assets	0.169	0.155	0.156	0.126
Receivables-to-Assets	0.198	0.182	0.234	0.193
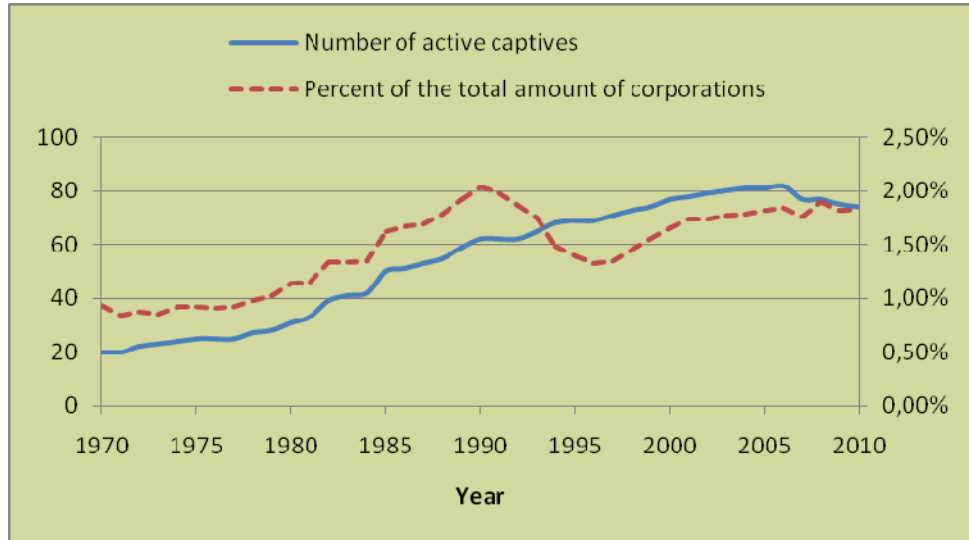
Figure A1. Number and percent of captives over time

Table A3. Variable definitions (Source: COMPUSTAT).

Variable	Description of Variable
Market Capitalization	shares outstanding times stock price(millions of dollars)
Book-to-Market, B/M	ratio of book equity to market equity
Sales Growth	the percentage growth in annual sales
Sales Volatility	standard deviation of quarterly sales estimated over the subsequent 3 years (12 quarters)
R&D/Sales	ratio of R&D expenditures to sales
Cash	ratio of cash holdings to total assets
Capex	ratio of capital expenditure to total assets
Return on Assets, ROA	ratio of earnings to average assets for the prior two fiscal years
Return on Equity, ROE	ratio of earnings to average equity for the prior two fiscal years
Debt-to-Equity, D/E	ratio of long-term debt to total book equity
Price-to-Earnings, P/E	ratio of the year-end stock price to earnings per share for the prior fiscal year
Receivables	ratio of receivables to total assets
Growth in Accounts Receivable	the percentage growth in receivables from the prior year to the current year
Cashflow	ratio of (income before extraordinary items + depreciation expense) to prior year total assets
Market Share	a ratio of company sales to the aggregate industry (SIC3-level) sales
Captive	Captive is a dummy variable, which takes the value of one if a firm has a captive finance subsidiary in a given year, 0

otherwise.

Table B1. Probit estimation results.

	Probit	Probit, FE
Log_mktcap	0.707***	0.953***
	(0.015)	(0.019)
Booktomarket	0.059*	0.044
	(0.029)	(0.033)
Salesgrowth	-0.331***	-0.403***
	(0.048)	(0.058)
Cashtoassets	-1.048***	-1.093***
	(0.146)	(0.174)
Capextoassets	-1.848***	-4.655***
	(0.267)	(0.372)
PE	-0.001**	-0.001**
	(0.000)	(0.000)
Rectoassets	0.373***	1.124***
	(0.081)	(0.121)
cons	-4.114***	-5.123***
	(0.069)	(0.384)
Time dummy	No	Yes
Ind. dummy	No	Yes
N	124687	113051
Pseudo R^2	0.2343	0.3030

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B2. Volatility of sales.

	OLS	Treatment regression
Main		
Log_mktcap	-0.017***	-0.016***
	(0.001)	(0.001)
Booktomarket	-0.007***	-0.007***
	(0.001)	(0.001)
Salesgrowth	0.012***	0.012***
	(0.001)	(0.001)
Cashtoassets	0.113***	0.112***
	(0.006)	(0.006)
Capextoassets	0.069***	0.068***
	(0.010)	(0.010)
PE	0.000	0.000
	(0.000)	(0.000)
DE	-0.003***	-0.003***
	(0.001)	(0.001)
ROE	-0.029***	-0.029***
	(0.003)	(0.003)
Captive	-0.011*	-0.035*
	(0.005)	(0.015)
_cons	0.258***	0.256***
	(0.017)	(0.017)
Captive		
Log_mktcap		1.010***
		(0.039)
Booktomarket		0.111
		(0.067)
Salesgrowth		-0.428***
		(0.113)
Cashtoassets		-0.914**
		(0.351)
Capextoassets		-4.933***
		(0.730)

Table B2. Volatility of Sales – Continued

	OLS	Treatment regression
PE		-0.001
		(0.001)
Rectoassets		1.264***
		(0.237)
cons		-9.603
		(.)
Time dummy	Yes	Yes
Ind. dummy	Yes	Yes
hazard		
lambda		0.012
		(0.007)
N	27204	27204
R^2	0.109	

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B3. Profitability and captive finance subsidiary.

	ROE		ROA	
	OLS	Treatment regression	OLS	Treatment regression
Main				
Log_mktcap	0.035***	0.034***	0.013***	0.012***
	(0.001)	(0.001)	(0.000)	(0.000)
Booktomarket	-0.069***	-0.069***	-0.036***	-0.036***
	(0.001)	(0.001)	(0.001)	(0.001)
Salesgrowth	0.002*	0.003*	0.009***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)
Cashtoassets	-0.036***	-0.036***	-0.006	-0.005
	(0.006)	(0.006)	(0.003)	(0.003)
Capextoassets	-0.044***	-0.043***	0.002	0.003
	(0.009)	(0.009)	(0.005)	(0.005)
PE	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
DE	0.001	0.001	-0.012***	-0.012***
	(0.001)	(0.001)	(0.000)	(0.000)
Captive	0.017***	0.048**	0.003	0.016*
	(0.005)	(0.016)	(0.002)	(0.008)
_cons	0.030**	0.041**	0.033***	0.041***
	(0.011)	(0.015)	(0.006)	(0.008)
Captive				
Log_mktcap		0.950***		0.950***
		(0.020)		(0.020)
Booktomarket		0.046		0.046
		(0.036)		(0.036)
Salesgrowth		-0.381***		-0.381***
		(0.063)		(0.063)
Cashtoassets		-1.331***		-1.330***
		(0.193)		(0.193)
Capextoassets		-4.551***		-4.551***
		(0.387)		(0.387)
PE		-0.001**		-0.001**
		(0.000)		(0.000)

Table B3. Profitability and captive finance subsidiary – Continued

	ROE		ROA	
	OLS	Treatment regression	OLS	Treatment regression
Rectoassets		1.108***		1.108***
		(0.128)		(0.128)
cons		-9.771***		-10.159
		(0.195)		(.)
Time dummy	Yes	Yes	Yes	Yes
Ind. dummy	Yes	Yes	Yes	Yes
hazard				
lambda		-0.016*		0.002
		(0.008)		(0.004)
N	105046	105046	105044	105044
R²	0.150		0.149	

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Table B4. Captive subsidiaries and stock returns during the crisis 2008-2010.

	OLS	OLS with FE, clustering
Captive	-0.171*	-0.222***
	(0.088)	(0.043)
Log_mktcap	0.049***	0.043***
	(0.012)	(0.010)
Salesgrowth	0.365***	0.491***
	(0.028)	(0.073)
Cashtoassets	0.659***	0.563***
	(0.083)	(0.098)
Capextoassets	1.316***	0.030
	(0.213)	(0.347)
PE	-0.000	0.000
	(0.000)	(0.000)
DE	-0.020	0.003
	(0.015)	(0.012)
cons	0.165***	0.469*
	(0.035)	(0.219)
Time dummy	No	Yes
Ind. dummy	No	Yes
N	7046	7046
R^2	0.048	0.103

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B5. Captive subsidiaries and profitability during the crisis 2008-2010.

	ROE	ROA
	Treatment regression	Treatment regression
Main		
log_mktcap	0.040***	0.018***
	(0.003)	(0.002)
booktomarket	-0.065***	-0.029***
	(0.004)	(0.002)
salesgrowth	0.004	0.004
	(0.005)	(0.002)
cashtoassets	0.010	0.017
	(0.018)	(0.009)
capextoassets	-0.066	-0.011
	(0.047)	(0.025)
pe	0.000***	0.000***
	(0.000)	(0.000)
de	0.005	-0.005**
	(0.056)	(0.029)
captive	0.137**	0.052*
	(0.052)	(0.027)
cons	0.054	0.031
	(0.042)	(0.022)
Captive		
log_mktcap	0.903***	0.903***
	(0.072)	(0.072)
booktomarket	-0.011	-0.011
	(0.139)	(0.139)
salesgrowth	-0.882**	-0.882**
	(0.270)	(0.270)
cashtoassets	-0.307	-0.307
	(0.487)	(0.487)
capextoassets	-5.271***	-5.271***
	(1.586)	(1.586)
pe	0.002	0.002
	(0.002)	(0.002)

Table B5. Captive subsidiaries and profitability during the crisis 2008-2010-
Continued

	ROE Treatment regression	ROA Treatment regression
rectoassets	1.025*	1.025*
	(0.516)	(0.516)
cons	-10.182	-10.182
	(.)	(.)
hazard		
Lambda	-0.058*	-0.026*
	(0.025)	(0.013)
N	7296.000	7296.000
R^2		

Standard errors in parentheses
* p < 0.055, ** p < 0.01, *** p < 0.001