Financial Crisis Effects on the Firms' Debt Level: Evidence from G-7 Countries

Pasquale De Luca

Faculty of Economy, University "La Sapienza", Rome, Italy Via del Castro Laurenziano, n. 9–00161 Rome, Italy Phone: +39 06 49766454 Email: pasquale.deluca@uniroma1.it

Abstract

The paper analyzes the effects of the financial crisis on firms' debt level in G-7 countries. The analysis is based on a sample of non-financial firms listed in G-7 countries in the period 1994-2013 distinguishing between pre-crisis period and crisis period.

Two are the main findings of the analysis: first, during the analysis period, the average debt level of the firms in all countries converges to an "approximate range" that is slightly different between countries; second, the behaviour about debt level is different between firms in G-7 countries in the crisis period respect the pre-crisis period. While firms in European countries decrease the debt level, firms in USA, Canada and Japan increase it.

JEL Classification: G31, G32, M21

Keywords: capital structure, debt level, leverage, debt capacity, financial strategy

1. INTRODUCTION

The firm's debt choices have confounded managers and financial economists for decades and it is still open, despite the vast and relevant theoretical literature and decades of empirical tests. The Modigliani-Miller's theory (1958, 1963) is considered the starting point of the modern theory of the capital structure. Based on strong restrictive assumptions, they argue that capital structure choices has irrelevant both on the value of the firm than on its cost of capital (Proposition I and II). Over the years, removing some restrictions assumptions and introducing other variables, has developed many theories and emprirical researches that postulate the relevance of the firm's capital structure on its value. The trade-off theory (Kraus and Litzenberger, 1973) tries to find "optimal" capital structure based on the market imperfection and considering taxes and costs of financial distress. The theory postulates that the firm's capital structure is a result of a trade-off between benefits and costs of the debt.

Usually another relevant element considered in the definition of debt level based on trade-off between benefits and costs of debt are the agency costs (Morellec *et al.*, 2010, 2004). The agency theory (Jensen, 1986; Jensen and Meckling, 1976) focuses attention on the effect of debt on relationship between shareholders and management on the one hand, and between shareholders and debtholders on the other hand. Debt has positive effect on agency cost of equity reducing the conflicts between shareholders and management in order its discipline effect on management increasing the firm's default risk (Jensen, 1986). Reverse, debt has a negative effect on agency cost of debt increasing the conflicts between shareholders and debtholders in order to the shareholders' moral hazard and asset-substitutions.

The pecking order theory (Baker and Wurgler, 2002; Fama and French, 2002, 1998; Shyam-Sunder and Myers, 1999; Myers, 2001, 1984; Myers and Majluf, 1984) argues that the firm's choices about capital structure are based on a source hierarchy rather than a trade-off between benefits and costs of debt. Firm prefers first internal source of finance due to self-finance adapting the dividend policy to the investment opportunities. If external source are required, the firm prefers to resort first to the debt, then hybrid instruments and only finally to equity. Therefore the internal sources of finance (self-finance) are preferred to external one where debt is preferred to equity.

Also the market time theory (Baker and Wurgler, 2002) argues that the firm's choices about capital structure are not based on a trade-off. It argues that the firm's capital structure choices are due to the capital market conditions and the manager decisions over time. Firm's capital structure evolves as the cumulative outcome of past attempts to time the equity market (Frank and Goyal, 2009; Hovakimian, 2006; Ritter, 2003; Baker and Wurgler, 2002; Korajczyk et al., 2003; Myers and Majluf, 1984).

The empirical researches have highlighted many determinants, in addition to the models, that could affect the capital structure choices (Frank and Goyal, 2009, 2003; Rajan and Zingales, 1995; Harris and Raviv, 1991; Titman and Wessels, 1988). The difficulties associated with determinants are not due only to the correct identification, but also in their effects, positive or negative, on the capital structure choices. This depends also

on the kinds of the firm. It is not unusual that a single determinant has a positive impact on the capital structure choices in some studies while negative in other.

Theories and empirical researches seem to explain some aspects under certain condition of the firm's behaviour. Actually there is still no theory can fully explain the firm's behaviour on capital structure or, even more, be able to define the optimal capital structure.

This paper is a part of debate. It studies the effect of the financial crisis on the firms' debt level. It tries to measure the financial crisis effects on the firms' debt level in the G-7 countries. At this end, dating the beginning of the financial crisis in 2007, the entire period of analysis (1994-2013) is divided in two sub-periods: pre-crisis period, from 1994 to 2007, and crisis period, from 2008 to 2013.

2. METHOD

2.1. Assumptions

Assumption 1: in this context, capital structure's choices of the firm reflect its choices about leverage. Also the leverage refers to the firm's financial debt (both short, medium and long-term). Finally, it is omitted the specification "financial debt" that becomes simply "debt level" of the firm.

Assumption 2: in the literature are developed several debt measurements in order to the analysis purposes (Frank and Goyal, 2009; Hall et al., 2004; Booth et al., 2001; Demirgüç-Kunt and Maksimovic, 1999; Rajan and Zingales, 1995). In this context the total debt of the firm is measured by the ratio of Total Debt (both short, medium and long term) / Total Assets (book value).

Assumption 3: the firm's debt level is defined based on its book-value. In literature some scholars advocate the book-leverage while others the market-value (Welch, 2004; Myers, 2001, 1984; Shyaman-Sunder and Myers, 1999; Titman and Wessels, 1988; Rajan and Zingales, 1995). Two are the main reasons for the use of market-value: *i*) the book value is primarily a plug number used to balance the left-hand side and the right-lend side of the balance sheet rather than a managerially relevant number; *ii*) the book-value is backward-looking by measuring what has taken place while market-value is forward-looking by measuring what will be on the base of expectations and market perspectives. Despite these strong arguments, in this paper it is used book value based on equally strong arguments. Among these the main are the following: *i*) market-value of the firm is difficult to determinate in each moment, subject to the market volatility and the data choices by reference to the market value is arbitrary; *ii*) managers tend to think in term of book value rather than market value because it is more easily accessible, more accurately recorded and not subject to market volatility; *iii*) the measurement of the firm's economic performances are usually based on income statements and the book value measure of leverage is considerate as best proxy of market value; *iv*) debt is better supported by asset in place than by growth opportunities; *v*) the main cost of debt is the expected cost of financial distress in the bankruptcy event. In this case the accurate measure of debtholders' liabilities is the book value of debt and not of market value.

2.2. Data collection and descriptive analysis

The sample is built by using a panel data of non-financial firms listed in the G-7 countries (USA, UK, Canada, Japan, Germany, France, Italy) in a period 1994-2013. Are considered only firms with no missing data in the analysis period. Financial firms are not considered in the sample because their debts are not strictly comparable to the debt level of nonfinancial firms.

The data souce is Datastream database. The dataset includes 4.142 firms for a total observations of 82.840. In details, the dataset includes: 1.220 firms in USA (24.400 observations); 305 firms in UK (6.100 observations); 613 firms in Canada (12.260 observations); 1.616 firms in Japan (32.320 observations); 194 firms in Germany (3.880 observations); 159 firms in France (3.180 observations) and 35 firms in Italy (700 observations).

The Table I reports firms included in the dataset, distinguished by industry reference.

The *Table II* reports the year average debt level of the firms in G-7 countries. The *Figure 1* shows its performance for each of G-7 countries.

Calculating the mean of the year average debt level of the firms in G-7 countries for the entire period of analysis (1994-2013), firms in Italy have higher debt level (27,2%) followed by the firms in USA (26,4%), Japan (23,6%), France (21,2%), Germany (18,8%), UK (18,2%), Canada (8,1%). The data are different by distinguishing between pre-crisis period (1994-2007) and crisis period (2008-2013). In the first period, firms in Italy have higher debt level (25,9%) followed by the firms in Japan (24,7%), USA (23,9%), France (21,0%), Germany (20,2%), UK (18,0%), Canada (6,8%). Otherwise in second period, firms in USA have higher debt level (32,2%), followed by the firms in Italy (30,3%), France (21,7%), Japan (20,8%), UK (18,4%), Germany (15,4%), Canada (11,2%). Therefore the choices about debt level in the three periods considered tend to be different between the firms in the G-7 countries as the *Figure 2* shown.

Table I. Dataset								
Industry.Sector	USA	UK	Canada	Japan	Germany	France	Italy	Total
Aerospace & Defense	41	7	5	4	1	7	1	66
Alternative Energy	5							5
Automobiles & Parts	13	1	4	88	9	9	4	128
Beverage	12	5	5	12	12	6		52
Chemicals	52	9	4	135	10	5		215
Construction & Materials	50	18	12	197	18	13	8	316
Electricity	37	2	7	10	3	3		62
Electronic & Electrical Equipment	113	16	7	143	8	7		294
Fixed Line Telecommunications	9	2	1	1			1	14
Food & Drug Retailers	14	5	6	35	2	4		66
Food Producers	37	11	8	95	10	10		171
Forestry & Paper	8	1	5	10	2	2		28
Gas, Water & Multiutilities	34	3	3	13	5	2	2	62
General Industrials	28	8	4	30	3	4	2	79
General Retailers	72	19	10	68	9	6	1	185
Health Care Equipment & Services	96	4	7	20	9	1		137
Household Goods & Home Construction	54	17	1	53	14	4	2	145
Industrial Engineering		25	9	209	32	6	1	282
Industrial Metals & Mining	17	1	38	55	4	3	1	119
Industrial Transportation	27	6	4	55	5	5	1	103
Leisure Goods	15	4		23	1	3		46
Media	34	23	10	17	2	10	4	100
Mining	10	8	328	4	3	2		355
Mobile Telecommunications	3	1	2	1				7
Oil & Gas Producers	53	7	74	8		3		145
Oil Equipment & Services	33	4	13	1		2	1	54
Personal Goods	21	7	1	72	14	10	2	127
Pharmaceuticals & Biotechnology	66	5	10	32		3	1	117
Software & Computer Services	47	13	10	30	1	9		110
Support Services	69	49	12	52	2	6	1	191
Technology Hardware & Equipment	96	7	6	73	4	4		190
Tobacco	3	1						4
Travel & Leisure	51	16	7	70	11	10	2	167
Total Firms	1.220	305	613	1.616	194	159	35	4.142
Number of observations	24.400	6.100	12.260	32.320	3.880	3.180	700	82.840

TABLE I

TABLE II

Table II. Year average debt level of the sample non-financial firms listed in the G-7 countries in the period 1994-2013.

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Italy	26,2%	24,7%	22,3%	23,1%	22,2%	22,4%	25,0%	27,0%	27,2%	27,5%	28,9%	29,2%	28,1%	28,8%	32,4%	32,0%	30,4%	32,4%	31,5%	23,0%
Germany	18,3%	18,2%	21,2%	21,4%	21,2%	21,8%	21,9%	22,3%	21,3%	20,5%	19,1%	19,5%	18,4%	17,8%	18,4%	17,5%	16,4%	15,6%	15,1%	9,6%
France	17,3%	18,5%	19,7%	19,9%	20,2%	20,9%	21,8%	22,1%	22,9%	26,0%	21,1%	21,1%	20,4%	22,0%	24,0%	23,5%	21,8%	21,8%	19,8%	19,3%
UK	13,8%	14,8%	15,6%	16,2%	18,2%	19,0%	18,8%	19,0%	19,7%	20,5%	19,1%	19,5%	19,0%	19,7%	21,6%	20,7%	18,2%	17,3%	16,7%	16,3%
USA	18,7%	19,9%	19,5%	20,4%	24,4%	25,8%	27,1%	26,2%	27,3%	25,6%	24,1%	24,8%	25,1%	25,4%	28,4%	35,0%	34,7%	34,8%	34,3%	26,1%
Canada	3,6%	4,1%	4,0%	4,3%	5,9%	6,5%	6,4%	7,3%	7,6%	8,2%	8,2%	9,8%	9,5%	9,6%	11,2%	11,4%	10,5%	11,1%	12,2%	11,1%
Japan	25,1%	24,8%	24,4%	24,3%	27,6%	28,8%	28,2%	26,5%	26,7%	25,8%	23,5%	21,9%	19,9%	18,9%	19,4%	22,5%	21,7%	20,9%	20,5%	20,0%



Figure 1. Year average debt level of the firms in G-7 countries in a period of 1994-2013.



Figure 2. Mean of the year average debt level of the firms in G-7 countries for the entire analysis period (1994-2013), the pre-crisis period (1994-2007) and the crisis period (2008-2013).

These differences between firms in G-7 countries are more evident by calculating the compound annual growth rate (CAGR) with regard to the year average debt level of the firms in the entire period of analysis (1994-2013), in pre-crisis period (1994-2007) and in crisis period (2008-2013).

In entire period of analysis, the average debt level increases for the firms in Canada (+6,1%), USA (+1,8%), UK (+0,9%) and France (+0,6%), while it decreases for the firms in Germany (-3,4%), Japan (-1,2%) and Italy (-0,7%). The analysis results are even more interesting by distinguishing between the pre-crisis period and crisis period. In the pre-crisis period, the average debt level increases for the firms in Canada (+7,8%), UK (+2,8%), USA (+2,4%), France (+1,9%), Italy (+0,7%) while decreases for the firms in Japan (-2,1%) and Germany (-0,2%). Otherwise in the crisis period, the average debt level increases for the firms in Canada (+2,3%), Japan (+0,9%), USA (+0,5%) while decreases for the firms in Germany (-9,8%), Italy (-3,7%), UK (-3,2%) and France (-2,2%).

Therefore, there is a different behaviour about debt level choices among the firms in the G-7 countries between the pre-crisis and crisis period. On the one hand, firms in Italy, France and UK increase the debt level in the pre-crisis and decrease it in the crisis-period. On the other hand, firms in USA and Canada increase debt level both in pre-crisis and crisis period. Then, firms in Germany decrease debt level in both pre-crisis and crisis period. Then, firms in germany decrease debt level in both pre-crisis and crisis period. Then, firms in germany decrease debt level in both pre-crisis and crisis period while firms in Japan decrease debt level in pre-crisis period and increase it in crisis period. Therefore, in crisis period the firms in European countries reduce debt level while firms in USA, Canada and Japan increase it. The *Figure 3* shows these differents behaviour.



Figure 3. CAGR of the year average debt level of the firms in G-7 countries for the entire analysis period (1994-2013), the pre-crisis period (1994-2007) and the crisis period (2008-2013).

2.3. Portfolio analysis

Taking a cue from Lemmon, Roberts and Zender's study (2008), for each of the G-7 countries, the firms are grouped into 5 portfolios based on their debt level in year 1994 considered year zero:

- 1) Portfolio A, groups firms with low debt level: lower than 20,5% in the year 1994;
- 2) Portfolio B, groups firms with medium-low debt level: between 20,6% and 30,5% in the year 1994;
- 3) Portfolio C, groupes firms with medium-high debt level: between 30,6% and 40,5% in the year 1994;
- 4) Portfolio D, groups firms with high debt level: between 40,6% and 50,5% in the year 1994;
- 5) Portfolio E, groups firms with very high debt level: higher than 50,6% in the year 1994.

For each year of the analysis period (1994-2013), the portfolio's year average debt level is equal to the average of debt level of the firms grouped in it. The *Table III* reports the analysis results for each of the G-7 countries.

TABLE III

Table III. The year average debt level of the Portfolio.

USA	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Portfolio A	6,1%	9,0%	9,8%	11,4%	17,5%	19,2%	22,4%	20,5%	23,4%	21,3%	21,3%	22,7%	21,3%	24,0%	25,6%	39,2%	39,5%	39,8%	38,9%	25,7%
Portfolio B	25, 9 %	26,6%	26,0%	26,5%	27,6%	28,4%	27,9%	27,7%	26,8%	24,9%	23,0%	21,2%	21,2%	23,4%	32,7%	23,3%	23,8%	21,5%	21,6%	21, 9 %
Portfolio C	35,5%	34,5%	32,5%	33,0%	34,6%	36,2%	35,6%	37,1%	33,5%	34,5%	27,8%	28,9%	36,4%	25,8%	28,3%	28,0%	25,8%	26,3%	27,9%	26,6%
Portfolio D	44,8%	42,8%	40,1%	39,8%	41,3%	41,7%	39,0%	39,0%	38,4%	36,7%	33,5%	32,2%	33,5%	32,1%	34,2%	32,1%	30,2%	30,7%	30,7%	29,5%
Portfolio E	68, 3%	60,8%	55,0%	50,8%	48,1%	46,1%	43,0%	42,5%	43,3%	39 , 8%	37,4%	38,5%	39,6%	36,6%	41,4%	38,5%	37,0%	38,4%	36,1%	36,1%
UK	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Portfolio A	8,2%	9,8%	11,2%	12,7%	14,7%	15,2%	15,3%	16,4%	17 ,0 %	17 ,9 %	16,6%	16 ,9 %	16,2%	16 ,9 %	19,1%	17 ,9 %	15,3%	14,7%	14,0%	14,0%
Portfolio B	24,1%	23,6%	23,7%	23,1%	25,4%	27,2%	24,0%	22,4%	22,7%	23,6%	23,1%	22,3%	22,1%	23,3%	25,0%	24,1%	22,2%	20,4%	21,1%	20,1%
Portfolio C	34,4%	33,8%	32,0%	29,3%	31,5%	32,2%	30,8%	34,6%	36,6%	36,6%	32,4%	34,7%	37,5%	37,1%	35,6%	38,8%	35,8%	34,8%	31,7%	28,8%
Portfolio E	67 , 9%	63,4%	54,3%	35,1%	34,8%	39,0%	38,2%	23,5%	30,9%	29,9%	22,1%	37,8%	2 8,9 %	25,9%	26,3%	27,0%	21,1%	18,3%	14,0%	9,4%
CANADA	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Portfolio A	0,4%	1,1%	1,2%	1,4%	3,0%	3, 9 %	3,7%	4,8%	5,2%	6,1%	6,3%	8,1%	7,8%	8,0%	9 ,5%	10,0%	9,0%	9 ,6%	10,7%	9,4%
Portfolio B	24,7%	25,8%	25,5%	29,0%	32,2%	34,5%	30,3%	30,3%	30,3%	28,4%	25,0%	24,1%	23,3%	22,0%	27,4%	24,6%	23,2%	23,8%	25,1%	24,8%
Portfolio C	35,8%	35,6%	34,8%	35,5%	36,4%	33,5%	34,1%	34,9%	34,0%	32,2%	31,6%	30,3%	31,1%	30,6%	30,8%	28,6%	25,1%	26,5%	26,7%	27,3%
Portfolio D	43,7%	42,7%	38,9%	39,5%	38,1%	36,6%	37,3%	34,8%	34,2%	33,3%	31,7%	30,4%	30,9%	27,1%	25,8%	26,8%	28,1%	29,4%	32,9%	33,4%
Portfolio E	60,2%	51,2%	4 9 ,3%	46,1%	44,3%	35,1%	43 ,9 %	41,7%	35,6%	31 ,9 %	31,8%	34,5%	32 ,9 %	32,1%	38,5%	31,5%	31,6%	33,8%	32,6%	32,6%
JAPAN	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Portfolio A	6,5%	6, 9 %	6, 9 %	7,1%	14,6%	15,2%	15,1%	14,3%	14,6%	13, 9 %	12, 9 %	12,4%	11,6%	11,4%	11, 9 %	14,0%	13,5%	13,1%	13,1%	12,7%
Portfolio B	26,0%	25,4%	24,6%	24,0%	23,8%	25,2%	24,8%	23,4%	23,1%	22,8%	20,4%	18,8%	16,7%	16,0%	16 ,9 %	20,1%	19,8%	19,3%	18,7%	17,7%
Portfolio C	35,6%	35,2%	34,5%	34,1%	34,0%	35,0%	34,1%	32,1%	32,3%	31,6%	28,4%	26,0%	23,2%	21,1%	21,3%	24, 9 %	23,2%	22,3%	21,3%	20,8%
Portfolio D	45,0%	44,1%	43,0%	43,1%	43,5%	45 <i>,</i> 3%	44,6%	41,6%	42,7%	41,1%	37,4%	34,6%	31,1%	28,9%	28,8%	33,6%	32,4%	31,1%	29,8%	29,6%
Portfolio E	61,1%	60,0%	59,3%	58,7%	58,3%	60,2%	57,6%	54,6%	54,3%	52,6%	47 ,9 %	44,2%	40,7%	38,6%	38,8%	43,7%	42,3%	40,4%	40,1%	39,7%
GERMANY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Portfolio A	5,1%	6,0%	12,2%	13,6%	14,1%	14,1%	14,3%	15,0%	15,0%	14,4%	13,3%	13,1%	12,5%	12,4%	13,1%	12,9%	12,5%	11,6%	11,4%	7,3%
Portfolio B	24,5%	25,4%	24,7%	23,1%	25,9%	29,3%	30,5%	32,2%	27,3%	26,3%	23,4%	26,7%	24,6%	27,2%	27,3%	25,5%	23,9%	24,3%	23,7%	18,6%
Portfolio C	35,3%	33,0%	32,0%	33,0%	33,2%	31,7%	33,5%	33,5%	30,6%	31 ,8 %	30,9%	29,4%	26,3%	25,8%	29,0%	28,0%	26,1%	25,3%	22,9%	12,2%
Portfolio D	45,3%	46,5%	44,6%	42,5%	40,1%	40,2%	39,1%	34,5%	33,4%	28,5%	27,3%	31,3%	24,3%	13,8%	16,2%	13,7%	11,0%	10,5%	9,8%	6,1%
Portfolio E	63,0%	52 , 9%	48,8%	42,3%	30,8%	35,3%	29,6%	29,7%	32,6%	31,4%	30,3%	29,2%	35,5%	33,9%	28,5%	24,4%	21,0%	19,3%	19,4%	7,3%
FRANCE	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Portfolio A	6,5%	8,7%	11,7%	12,5%	13,1%	14,6%	15,5%	15,9%	17,6%	23,3%	15,1%	1 6,3 %	16,4%	17 ,8 %	20,0%	19,6%	17,8%	18,0%	16,3%	19,8%
Portfolio B	25,6%	26,3%	26 ,9 %	27,5%	27,7%	27,2%	2 9, 8%	2 9 ,8%	2 9 ,5%	2 9 ,5%	28,3%	28,5%	26,3%	29,0%	30,2%	2 9 ,8%	28,4%	28,4%	25,7%	18,3%
Portfolio C	34,3%	33,8%	31,0%	30,1%	29,6%	29,6%	30,2%	30,4%	31,1%	29,4%	27,6%	23,4%	23,9%	24,0%	27,0%	26,5%	25,0%	25,2%	22,8%	17,8%
Portfolio D	44,7%	42,9%	37,6%	33,6%	33,1%	33,3%	30,3%	31,0%	28,3%	28,6%	32, 9 %	29,9%	26,6%	29,9%	33,4%	32,7%	30,1%	26,8%	26,1%	22,3%
Portfolio E	6 9 ,2%	70,5%	60,1%	59,2%	52,3%	48,9%	38,1%	3 9 ,0%	38,2%	40,5%	43,3%	41,4%	25,6%	23,5%	17,2%	17,2%	18,5%	14,0%	13,5%	13,6%
ITALY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Portfolio A	10,4%	11,3%	8,7%	12,1%	10,1%	11,0%	13,4%	15,4%	17,2%	17,4%	21,1%	23,7%	24,0%	27,2%	30,8%	28,0%	28,4%	33,4%	31,0%	22,2%
Portfolio B	25,3%	23,2%	23,1%	22,0%	22,2%	24,7%	27,0%	29,1%	28,5%	30,4%	31,8%	31,6%	30,7%	31,1%	34,6%	35,3%	32,0%	33,3%	35,2%	15,0%
Portfolio C	33,4%	33,2%	30,6%	31,2%	30,2%	30,8%	30,7%	33,2%	31,6%	30,1%	29,7%	26,2%	24,6%	25,6%	31,4%	31,2%	30,5%	31,8%	28,0%	23,5%
Portfolio D	43,3%	42,0%	38,5%	35,5%	34,5%	27,7%	39,0%	40,8%	41,4%	42,5%	41,0%	45,6%	40,0%	38,2%	36,1%	40,3%	36 , 9%	31,7%	33,4%	35,6%
Portfolio E	57,6%	38,7%	30,9%	32,3%	34,6%	33,9%	32,4%	32,8%	33,9%	35,8%	36,2%	33,6%	33,6%	24,1%	29,9%	29,4%	23,3%	26,6%	31,7%	32,0%

For each of the G-7 countries, the analysis shows an overall general convergence of the average debt level of the firms towards an "approximate range" as shown in Figure 4.



Figure 4. The year average debt level of the Portafolios (A, B, C, D, E).

This "approximate range" which converge all portfolios over time in the analysis period is different between the G-7 countries. Calculating the compound annual growth rate (CAGR) for the entire analysis period, pre-crisis and crisis period, the analysis shows a different behaviour between G-7 countries. It may be useful to present the analysis results for single countries as following:

- in USA the debt level approximate range toward which converge all portfolios over time is between 25% and 35%. The *Portfolio A* increases in the entire period (+7,9%), pre-crisis period (+11,1%) and crisis period (+1,1%). The *Portfolio B* decreases in the entire period (-0,9%), pre crisis-period (-0,8%) and crisis period (-1,1%). The *Portfolio C* decreases in the entire period (-1,5%), pre crisis-period (-2,4%) while increases in crisis period (+0,5%). The *Portfolio D* decreases in the entire period (-2,2%), pre-crisis period (-2,5%) and crisis period (-1,4%). The *Portfolio E* decreases in the entire period (-3,3%), pre-crisis period (-4,7%) and crisis period (-0,2%);
- in UK the debt level approximate range toward all portfolios converge over time is between 15% and 25%. The *Portfolio A* increases in the entire period (+2,9%) and pre-crisis period (+5,8%) while decreases in crisis period (-3,0%). The *Portfolio B* decreases in the entire period (-0,9%), pre crisis-period (-0,3%) and crisis period (-2,4%). The *Portfolio C* decreases in the entire period (-0,9%) and crisis period (-4,2%) while increases in pre-crisis period (+0,6%). The *Portfolio E* decreases in the entire period (-9,9%), pre-crisis period (-7,1%) and crisis period (-15,5%);
- in Canada the debt level approximate range toward which converge all portfolios over time is between 25% and 35%. The *Portfolio A* increases in the entire period (+18,1%), pre-crisis period (+26,0%) and crisis

period (+2,7%). The *Portfolio B* increases in the entire period (+0,02%) and crisis period (+2,0%) while decreases in the pre-crisis period (-0,9%). The *Portfolio C* decreases in the entire period (-1,4%), pre crisis-period (-1,2%) and crisis period (-1,9%). The *Portfolio D* decreases in the entire period (-1,4%) and pre-crisis period (-3,6%), while increases in the crisis period (+3,5%). The *Portfolio E* decreases in the entire period (-3,2%) and pre-crisis period (-4,7%), while increases in the crisis period (+0,3%);

- in Japan the debt level approximate range toward which converge all portfolios over time is between 15% and 35%. The *Portfolio A* increases in the entire period (+3,6%), pre-crisis period (+4,4%) and crisis period (+1,8%). The *Portfolio B* decreases in the entire period (-2,0%) and pre-crisis period (-3,7%) while increases in the crisis period (+1,7%). The *Portfolio C* decreases in the entire period (-2,8%), pre crisis-period (-3,9%) and crisis period (-0,2%). The *Portfolio D* decreases in the entire period (-2,2%) and pre-crisis period (-2,2%) and pre-crisis period (-2,2%) while increases in the crisis period (+0,4%). The *Portfolio E* decreases in the entire period (-2,2%) and pre-crisis period (-2,2%) while increases in the crisis period (+0,4%). The *Portfolio E* decreases in the entire period (-2,2%) and pre-crisis period (-2,2%) while increases in the crisis period (+0,5%);
- in Germany the debt level approximate range toward which converge all portfolios over time is between 10% and 20%. The *Portfolio A* increases in the entire period (+2,0%) and pre-crisis period (+7,1%), while decreases in the crisis period (-8,4%). The *Portfolio B* decreases in the entire period (-1,4%) and crisis period (-6,1%) while increases in the pre-crisis period (+0,8%). The *Portfolio C* decreases in the entire period (-5,4%), pre crisis-period (-2,4%) and crisis period (-11,7%). The *Portfolio D* decreases in the entire period (-10,0%), pre-crisis period (-8,7%) and in the crisis period (-12,8%). The *Portfolio E* decreases in the entire period (-10,7%), pre-crisis period (-4,6%) and in the crisis period (-22,6%);
- in France the debt level approximate range toward which converge all portfolios over time is between 15% and 25%. The *Portfolio A* increases in the entire period (+6,1%), pre-crisis period (+8,1%) and crisis period (+1,8%). The *Portfolio B* decreases in the entire period (-1,7%) and crisis period (-7,4%) while increases in the pre-crisis period (+1,0%). The *Portfolio C* decreases in the entire period (-3,4%), pre-crisis-period (-2,7%) and crisis period (-4,8%). The *Portfolio D* decreases in the entire period (-3,6%), pre-crisis period (-3,0%) and in the crisis period (-4,8%). The *Portfolio E* decreases in the entire period (-8,2%), pre-crisis period (-8,0%) and in the crisis period (-8,7%);
- in Italy the debt level approximate range approximately range toward which converge all portfolios over time is between 15% and 35%. The *Portfolio A* increases in the entire period (+4,1%), pre-crisis period (+7,7%) and decreases in the crisis period (-3,3%). The *Portfolio B* decreases in the entire period (-2,7%) and crisis period (-11,4%) while increases in the pre-crisis period (+1,6%). The *Portfolio C* decreases in the entire period (-1,8%), pre-crisis-period (-2,0%) and crisis period (-1,4%). The *Portfolio D* decreases in the entire period (-1,0%), pre-crisis period (-1,0%) and in the crisis period (-1,2%). The *Portfolio E* decreases in the entire period (-3,1%), pre-crisis period (-6,5%) while increases in the crisis period (+4,8%).

Therefore the analysis finds that while in USA, Canada and Japan the crisis has significant but not strong effects on the firm's debt level, in UK, Germany, France and Italy the effects are more relevant with high reduction in the debt level.

3. CONCLUSION

The study analyzes the firms' debt level of the firms in G-7 countries in the period 1994-2013 distinguished between pre-crisis period (1994-2007) and crisis period (2008-203). Two are the main results.

First, the analysis finds that during the analysis period, the average debt level of the firms in all countries converges to an "*approximate range*" with slight differences between countries. It is between 25% and 35% for the firms in USA and Canada; 15% and 25% in UK and France, 15% and 35% in Japan, 10% and 20% in Germany; 15% and 35% in Italy.

Second, the analysis finds that the behaviour about debt level is different among the firms in G-7 countries expecially with regard to the effects of the financial crisis: firms in USA and Canada increase the debt level both in pre-crisis and crisis period; firms in Germany decrease the debt level in both pre-crisis and crisis period; firms in Japan decrease the debt level in pre-crisis period and decreased in crisis period; firms in Japan decrease the debt level in pre-crisis period. Generally, in the crisis period firms in European countries decrease the debt level while firms in USA, Canada and Japan increase it. Probably it is due to the different country's approach to face financial crisis expecially with regard to the monetary policy. While the central bank in USA, Canada and Japan, adopts a expansionary monetary policy, in European countries a restrictive policy.

The analysis results suggest that the country's institutional conditions affect the firm's debt level choices. In this sense it is reasonable to assume that these institutional conditions refer mainly to the economy and capital market performances, and to the development of the legal and bureaucracy system of the country's reference of the firm.

Therefore a study possible extention is to investigate the relationships between firm's debt level choices and the economic, financial and institutional system of the country's reference of the firm.

REFERENCE

- Baker, M. and Wurgler, J. (2002) Market timing and capital structure, Journal of Finance 57, 1-32.
- Beck, T., Demirgüç-Kunt, A., and Maksimovic, V. (2002) Financing patterns around the world: the role of institutions, World Bank Policy Research Working Paper 2905.
- Booth, L., Aivazian, V., Demirgüç-Kunt, A., and Maksimovic, V. (2001) Capital structure in developing countries, *Journal of Finance* 55, 87-130.
- Davydenko, S.A. and Franks, J.R. (2008) Do Bankruptcy Codes Matter? A Study of Defaults in France, Germany and the UK, *Journal of Finance* 63, 565-608.
- Degryse, H. and Ongena, S. (2005) Distance, Lending Relationship and Competition, Journal of Finance 55, 231-266.
- De Jong, A., Kabir, R., and Nguyen, T.T. (2008) Capital Structure around the World: the Roles of Firm and Country Specific Determinants, *Journal of Banking and Finance* 32, 1954-1969.
- Demirgüç-Kant, A. and Maksimovic, V. (1998) Law, Finance, and Firm Growth, Journal of Finance 53, 2107-2137.
- Demirgüç-Kant, A. andMaksimovic, V. (1999), Institutions, financial markets and firm debt maturity, *Journal of Financial Economics* 54, 295-336.
- Dinc, I.S. (2005) Politicians and Banks: Political Influences on Government-Owned Banks in Emerging Markets, *Journal of Financial Economics* 77, 453-479.
- Djankov, S., La Porta, R., Lopez-de-Silanes, F., and Shleifer, A. (2002) The Regulation on Entry, *Quarterly Journal of Economics* 117, 1-37.
- Fama, E.F. and French, K.R. (1998) Taxes, financing decisions, and firm value, Journal of Finance 53, 819-843.
- Fama, E. F. and French, K.R. (2002) Testing trade-off and pecking order predictions about dividends and debt, *Review of Financial Studies* 15, 1-33.
- Fan, J., Titman, S., and Twite, G. (2012) An International Comparison of Capital Structure and Debt Maturity Choices, *Journal of Financial and Quantitative Analysis* 47, 23-56.
- Fisman, R. (2001) Estimating the Value of Political Connections, American Economic Review 91, 1095-1102.
- Frank, M. Z. and Goyal, V.K. (2003) Testing the pecking order theory of capital structure, *Journal of Financial Economics* 67, 217-248.
- Frank, M.Z. and Goyal, V.K. (2009) Capital structure decisions: Which factors are reliably important?, *Financial Management* 38, 1-37.
- Harris, M. and Raviv, A. (1991) The theory of Capital Structure, The Journal of Finance 1, 297-355.
- Hall, G.C., Hutchinson, P.J., and Michaelas, N. (2004) Determinants of the capital structures of European SMEs, *Journal of Business Finance and Accounting* 31, 711-728.
- Hovakimian, A. (2006) Are observed capital structures determined by equity market timing?, Journal of Financial and Quantitative Analysis 41, 221-243.
- Jensen, M.C. (1986) Agency cost of free cash flow, corporate finance and takeovers, American Economic Review 76, 323-329.
- Jensen, M.C. and Meckling, W. (1976) Theory of the firm: Managerial behaviour, agency costs, and ownership structure, *Journal of Financial Economics* 3, 305-360.
- Johnson, S., and Mitton, T. (2003) Cronyism and Capital Controls: Evidence from Malaysia, *Journal of Financial Economics* 67, 351-382.
- Korajczyk, R. A. and Levey, A. (2003) Capital Structure Choice: Macroeconomic Conditions and Financial Constraints, *Journal of Financial Economics* 68, 75-109.
- Kraus, A. and Litzenberger, R.H. (1973) A State-Preference Model of Optimal Financial Leverage, Journal of Finance 28, 911-922.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R.W. (2002) Investor Protection and Corporate Valuation, *Journal of Finance* 57, 1147-1170.
- Leland, H. and Pyle, D. (1977) Information asymmetrics, financial structure, and financial intermediation, *Journal of Finance* **32**, 371-388.
- Lemmon, M.L., Roberts, M.R., and Zender, J.F. (2008) Back to the beginning: Persistence and the cross-section of corporate capital structure, *Journal of Finance* 63, 1575-1608.
- Modigliani, F. and Miller, M. (1958) The Cost of Capital, Corporation Finance and the Theory of Finance, American Economic Review 48, 261-297.
- Modigliani, F. and Miller, M. (1963) Corporate income taxes and the cost of capital: A correction, *American Economic Review* 53, 433-443.
- Morellec, E. (2004) Can managerial discretion explain observed leverage ratios?, Review of Financial Studies 17, 257-294.
- Morellec, E. and Schurhoff, N. (2010) Dynamic investment and financing under personal taxation, *Review of Financial Studies* 23, 101-146.
- Miller, M. (1977) Debt and taxes, Journal of Finance 32, 261-276.
- Myers, S.C. (1984) The capital structure puzzle, Journal of Finance 39, 575-592.
- Myers, S. C. (2001) Capital structure, Journal of Economic Perspectives 15, 81-102.
- Myers, S. C. and Majluf, N.S. (1984) Corporate financing and investment decision when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.
- Rajan, R. G. and Zingales, L. (1995) What do we know about capital structure: some evidence from international data, *Journal of Finance* 50, 1421-1460.
- Ritter, J. (2003). Investment banking and security issuance,in: G. Constantinides, M. Harris and R.Stulz(eds.), Handbook of the Economics of Finance. Elsevier, Amsterdam.
- Shyam-Sunder, L. and Myers, S.C. (1999) Testing static trade-off against pecking order models of capital structure, *Journal of Financial Economics* 51, 219-244.
- Stulz, R. (1990) Managerial discretion and optimal financing policies, Journal of Financial Economics 26, 3-27.
- Titman, S. and Wessels, R. (1988) The determinants of capital structure choice, Journal of Finance 43, 1-19.
- Titman, S. and Tsyplakov, S. (2007) A dynamic model of optimal capital structure, Review of Finance 11, 401-451.
- Welch, I. (2004) Capital Structure and Stock Returns, Journal of Political Economy 112, 106-131.
- Wurgler, J. (2000) Financial markets and the allocation of capital, Journal of Financial Economics 58, 187-214.