

The Debt Choices of the Firms in Developed Countries: Evidence from G-7

Pasquale De Luca¹

¹ Faculty of Economics, "Sapienza" University, Rome, Italy

Correspondence: Pasquale De Luca, Faculty of Economics, "Sapienza" University, Rome, Italy. Tel: 39-06-4976-6454. E-mail: pasquale.deluca@uniroma1.it

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Abstract

This study examines the main determinants that affect the firm's debt choices. Based on a panel data of non-financial listed firms in G-7 countries in the period 1994-2013, the study shows that the firm's choices about debt level are functions of several provisions over time about, on the one hand, to the firm's characteristics and its expected performances and, on the other hand, to the economic, financial and institutional system of country's reference.

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

1. Introduction

The firm's debt level choice is one of the most relevant problems for managers and financial economists. It is still open despite relevant theoretical literature and decades of empirical tests.

Modigliani-Miller's theory (1958, 1963) is considered the starting point of the modern theory of the capital structure. They argue that capital structure choices are 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 empirical researches that postulate the relevance of the firm's capital structure on its value.

The trade-off theory (Kraus & Litzenberger, 1973) tries to find the "optimal capital structure" by balancing benefits and costs of the debt with regard mainly to the tax shield and bankruptcy costs. Usually in this context also the agency costs of equity and debt are considered (Morellec et al., 2010, 2004). Based on the agency theory (Jensen, 1986; Jensen & Meckling, 1976) debt has positive effect on agency cost of equity, reducing the conflicts between shareholders and management, due to its discipline effect on management (Jensen, 1986), but, at the same time, also a negative effect on agency cost of debt, increasing the conflicts between shareholders and debtholders due to the moral hazard and asset-substitutions.

Other theories assume that the "optimal capital structure" is not due to the trade-off between benefits and costs of debt. The pecking order theory (Baker & Wurgler, 2002; Fama & French, 2002, 1998; Shyam-Sunder & Myers, 1999; Myers, 2001, 1984; Myers & Majluf, 1984) argues that the firm's choices about capital structure are based on a source hierarchy: firm prefers first internal sources and if external one are required, debt is preferred to equity. Also the market time theory (Baker & Wurgler, 2002) argues that the firm's choices about capital structure 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 & Goyal, 2009; Hovakimian, 2006; Ritter, 2003; Baker & Wurgler, 2002; Baker & Wurgler, 2002; Korajczyk et al., 2003; Myers & Majluf, 1984).

The empirical researches have highlighted many determinants, in addition to the models, that could affect the capital structure choices (Frank & Goyal, 2009, 2003; Rajan & Zingales, 1995; Harris & Raviv, 1991; Titman & Wessels, 1988). The problem is due to their identification and their effects (positive or negative) on the capital structure. It is not unusual that a single determinant has a positive impact on the capital structure choices in some studies while negative in others.

Theories and empirical researches seem to explain some aspects under certain condition of the firm's behaviour. Actually there is still no theory that 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 the debate. It draws on the most recent literature about the relevance of the economic, financial and institutional conditions of the country on the firm debt choices (Fan et al., 2012; Frank & Goyal, 2009; Beck et al., 2002; Booth et al., 2001; Demirguc-Kunt & Maksimovic, 1999). The studies show that the economic and financial development of the country and the quality of its institutional system affect the firm's debt level choices. These effects are usually considered separately. The originality of the paper lies in considering jointly these effects. In this sense, the paper's theoretical hypothesis is that the firm's choices about debt level are functions of several provisions over time related, on the one hand, the firm's characteristics and its expected performances and, on the other hand, the general development of the economy, capital markets and institutional system of country's reference.

This theoretical hypothesis is tested using a panel data of non-financial listed firms in G-7 countries (USA, UK, Canada, Japan, Germany, France and Italy) in the period 1994-2013.

The paper is organized as follows. Section 2 discusses the theoretical background in which it is made explicit the research theoretical hypothesis and its limitations. Section 3 discusses the analysis methodology and the dataset. Section 4 presents and discusses the analysis results. Section 5 draws the conclusions of the study.

2. The Theoretical Background

In literature many studies have focused on the identification and analysis of the main determinants that affects the firm's choices about debt level. The well-known determinants are the firm asset, size, growth, risk, financial deficit and surplus, profitability, stock price, taxation and the debt level of the industry's reference (Denis & McKeon, 2012; DeAngelo & Roll, 2011; Muzir, 2011; Rauh & Sufi, 2010; Frank & Goyal, 2003, 2009; Lemmon et al., 2008; De Jong et al., 2008; Byoun, 2008; Kayhan & Titman, 2007; Brounen et al., 2006; Claessens & Klapper, 2005; Welch, 2004; Bancel & Mittoo, 2004; Hall et al., 2004; Graham & Harvey, 2001; Rajan & Zingales, 1995; Harris & Raviv, 1991). These determinants are functions of the firm's structure and characteristics. Recent studies have expanded the perspective. They have investigated the effects of the economic, financial and institutional system of the country's reference on the firm's debt choices (Fan et al., 2012; Frank & Goyal, 2009; Masulis & Nahata, 2009; De Jong et al., 2008; Davydenko & Franks, 2008; Dinc, 2005; Degryse & Ongena, 2005; Johnson & Mitton, 2003; Beck et al., 2002; Djankov et al., 2002; La Porta et al., 2002; Booth et al., 2001; Fisman, 2001; Demirguc-Kunt & Maksimovic, 1999).

The originality of the paper lies in considering all these determinants jointly. The paper's theoretical hypothesis is that firms' debt level choices are based not only on its characteristics and performances, but also on the economic, financial and institutional system of country's references. Therefore, firm has to define and evaluate its debt level sustainability over time based on the systemic and dynamic combination of three main variables:

- 1) Firm Fundamentals (FF), that groups determinants that affect the firm's debt level choices and refers to its structural characteristics and performances over time. In this context the determinants used are: the firm asset, size, growth, risk, financial deficit and surplus, profitability, stock price, taxation and the debt level of the industry's reference. Therefore the variable groups determinants that are endogenous to the firm and thus under its control;
- 2) Economic and Financial Conditions (EFC), that groups determinants that affect the firm's debt level choices and refers to the economic and capital markets performances of the country's reference of the firm. In this context, country's economic performances refer to the GDP and inflations rate. The first, has impact on the domestic consumptions, then on the domestic demand, and thus on the firm's ability to develop in the country over time. The second, has effects on the firm's capability to face debt obligation making it less onerous during inflation periods while lot in deflation one. The capital market and bank sector development of the country's reference affect the firm's choices about debt level, because they define the access conditions to debt in terms of amount, time and cost. Greater is the capital market and the bank sector development, greater is the capital movements, and easier is the access to the debt at favorable conditions by competitive firms. Therefore the variable groups determinants are exogenous to the firm and then out of its control. Thus, the firm can only try to manage their effects over time;
- 3) Institutional Conditions (IC), that groups determinants that affect firm's choices about debt level and refers to the quality and efficiency of legal, bureaucracy and taxation system of the country's reference of the firm. These significantly affect the investors' choices, both in equity and debt, due to the protection of their rights, simplicity of their actions and the weight of overall tax burden. More efficient is the legal system, lower is the bureaucracy and lower is the corporate and personal taxes, greater is the investors' attention on the

competitive firms. Therefore higher is the competitive firms capability to raise capital if their performances are in line with investors' expectations. Also in this case, the variable groups determinants are exogenous to the firm and then out of its control. Therefore in this case too, the firm can only try to manage their effects over time.

The empirical model proposed has limitations due to some assumptions made that it is necessary to say immediately. These can generate potential sources of bias. The main are the following:

- a) it is used a linear model. It is easy to use although not able to grasp the complexity of the problem about debt level;
- b) it is assumed that the capital structure's choices of the firm reflect its choices about leverage. Also it is assumed that 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;
- c) the total debt of the firm is measured by the ratio of Total Debt (both short, medium and long term) / Total Assets (book value);
- d) 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 & Myers, 1999; Titman & Wessels, 1988; Rajan & 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-hand 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 considered 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;
- e) the dataset are based only on firms reported in Datastream, listed since 1994 and until 2013. With regard to the sample two basic assumptions are needed. First, the percentage of listed firms differs widely across the G-7 countries as well as the average size of firms listed. Also, in each of the G-7 country listed firms may represent only a small part of all firms in the country. But if it is assumed that common institutions in a country can influence both the listed firms and non-listed firms, the information gathered from an analysis of listed firms will have broader implications (Rajan & Zingales, 1995). Second, it is possible that the firms between the G-7 countries are not perfectly homogeneous because there are not perfectly homogeneous the international data despite the use of a international database as data source;
- f) the sample is made from many observations. Material errors can be possible. Also, in order to manage exceptional value for each determinant fluctuation bands allowed are defined. These are built in such a way to consider outliers the values out of band in reasonable way. However the data that are not considered in the analysis do not change the results significantly;
- g) there are restrictive assumptions on some determinants. First, it is assumed that the development of bond market is equal to the stock market one. Therefore the development of the stock market can be used as a proxy of the development of the equity and bond market. Second, the determinant legal and bureaucracy system is measured by an index called "Institutional conditions – composit index". It is defined based on information contained in the Busing Doing annual report of The World Bank. In details, for each year it is calculated as a sum of Strength of legal rights index, Depth of credit information index, Strength of investor protection index, Enforcing Contracts – Time, Enforcing Contracts – Cost, Resolving Insolvency – Time, Resolving Insolvency – Cost, Resolving Insolvency – Recovery rate. For the year data not available, they are assumed equal to the data of the first year available;
- h) each determinant is usually measured by more than one measuring-indicator. The determinant's sign of correlation (positive or negative) is defined based on the prevailing correlation sign of the joint observation of its measuring-indicators.

3. Dataset and Methodology

Based on the theoretical hypothesis and limitations as discussed in the previous Section, the firm's debt level is function of the three variables as following:

$$D_{i,t} = f(FF_{i,t}; EFC_{i,t}; IC_{i,t}) \quad (1)$$

where: $D_{i,t}$ is the debt level of the i-firm in t-time and it is the dependent variable; $FF_{i,t}$ is the variable Firm Fundamentals for the i-firm in t-time; $EFC_{i,t}$ is the variable Economic and Financial Conditions for the i-firm in t-time; $IC_{i,t}$ is the variable Institutional Conditions for the i-firm in t-time.

In this context, the determinants grouped in the variable Firm Fundamentals (FF) are the following: Asset (TA), Industry (I), Size (S), Growth (G), Stock Price (SP), Profitability (P), Financial Deficit-Surplus (FDS), Risk (R) and corporate tax (TC). The determinants grouped in the variable Economic and Financial Context (EFC) are the following: Bank sector conditions (BS), Stock market conditions (SM) and Macroeconomic conditions (MC). Finally, the determinants grouped in the variable Institutional Conditions (IC) are the following: Legal and bureaucracy system (LS) and Taxations system (TS).

Based on a panel data, the empirical regression model is the following:

$$D_{i,t} = \alpha + \beta_1 FDS_{i,t} + \beta_2 P_{i,t} + \beta_3 R_{i,t} + \beta_4 G_{i,t} + \beta_5 TA_{i,t} + \beta_6 TC_{i,t} + \beta_7 S_{i,t} + \beta_8 SP_{i,t} + \beta_9 I_{i,t} + \beta_{10} BS_{i,t} + \beta_{11} SM_{i,t} + \beta_{12} MC_{i,t} + \beta_{13} LS_{i,t} + \beta_{14} TS_{i,t} + \varepsilon_{i,t} \quad (2)$$

Each of the determinant grouped in the three variables, is measured by several measuring-indicators as reported in Table 1.

Table 1. Variables, determinants and measuring-indicators

Variable	Determinant	Masuring-Indicator
Dependente variable	Debt level (D)	Total Debt (short, medium and long term) / Total Asset
Firm Fundamentals (FF)	Asset (TA)	TA.1: Tangible Asset / Total Asset TA.2: Annual percentage change of total asset
	Industry (I)	I.1: Average industry ratio of Total Debt / Total Capital I.2: Average industry ratio of Net Debt / Total Capital
	Size (S)	S.1: natural logarithm of Revenues S.2: natural logarithm of Total Asset
	Growth (G)	G.1: Enterprice value / Total Asset
	Stock Price (SP)	SP.1: Price volatility SP.2: Price / Book Value SP.3: Price / Earnings
	Profitability (P)	P.1: ROI P.2: ROA P.3: ROE P.4: annual percentage change of Enterproce Value
	Financial Deficit-Surplus (FDS)	FDS.1: Net Cash Flow Investing / EBIT FDS.2: Net Cash Flow Operating / EBIT FDS.3: Net Cash Flow Financing / EBIT
	Risk (R)	R.1: EBITDA / Interest Expenses on Debt R.2: EBIT / Interest Expenses on Debt R.3: EBIT / (EBIT – Interest Expenses on Debt)
	Firm Taxation (TC)	TC.1: Corporate tax rate TC.2: Income Tax / Net income before preferred dividend
	Economic and Financial Conditions (EFC)	Bank Sector Conditions (BS)
Stock Market Conditions (SM)		SM.1: Market capitalization of listed company / GDP SM.2: number of listed company SM.3: Annual percentage change of S&P global equity indices
Macroeconomic conditions (MC)		MC.1: Annual percentage change of the GDP MC.2: Annal inflation rate

Institutional (IC)	Conditions	Legal Bureaucracy System (LS)	LS.0: Institutional conditions – composit index
		Taxation System (TS)	TS.1: Total tax rate
			TS.2: Timing of paying taxes

The sample is 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. The choice of G-7 countries is mainly due to the fact that they are the major industrialized countries (Rajan & Zingales, 1995) with differences in the economic, financial and institutional system. The choice of long period, from 1994 to 2013, is mainly due because the choices about debt level required a long period in order to be fully implemented.

The data source is database Datastream. Other informations are obtained by the World Bank, Organisation for Economic Co-operation and Development (OECD), European Central Bank (ECB), International Monetary Fund (IMF), Eurostat.

The dataset include 4.142 firms for a total observations of 82.840 as following: 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 2 reports the firms included in the dataset Datastream distinguished by industry.

Table 2. Dataset

Industry	USA	UK	Canada	Japan	Germany	France	Italy	Tot
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 & service	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

The Table 3 reports the descriptive statistics of the measuring-indicators of the determinants grouped in the three variables.

Table 3. Descriptive statistics

	USA		UK		Canada		Japan		Germany		France		Italy	
	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev								
D	0,22	0,21	0,18	0,16	0,08	0,16	0,24	0,19	0,19	0,18	0,21	0,15	0,27	0,14
FDS.1	0,60	2,25	0,58	2,13	-0,10	2,13	0,49	2,03	0,49	1,85	0,67	1,97	0,69	1,81
FDS.2	0,79	1,98	0,81	1,97	0,39	1,48	0,82	2,29	0,63	1,83	0,78	1,79	0,83	1,66
FDS.3	-0,12	2,13	-0,18	2,14	-0,47	2,18	-0,29	2,04	-0,08	1,64	-0,05	1,61	-0,12	1,72
P.1	4,04	24,07	9,07	20,30	-7,82	27,07	2,38	7,10	5,74	17,34	6,32	10,80	3,55	7,27
P.2	2,00	20,87	5,08	13,07	-8,29	25,92	1,63	5,03	3,16	11,25	3,89	7,08	2,27	4,48
P.3	5,57	29,32	10,90	26,85	-7,96	28,95	2,24	14,44	4,75	27,19	7,71	16,97	2,01	19,09
P.4	0,15	0,55	0,12	0,50	0,10	0,59	0,01	0,45	0,06	0,42	0,10	0,47	0,06	0,52
R.1	13,26	32,62	17,55	31,51	-3,24	30,46	25,75	36,02	13,90	27,48	17,05	24,86	8,80	12,98
R.2	9,10	31,67	13,15	30,73	-5,49	30,81	18,29	34,59	9,47	25,39	11,77	23,36	5,00	12,15
R.3	1,12	3,79	1,19	2,60	0,57	2,19	1,19	3,98	1,13	5,44	1,13	4,27	1,40	6,71
G.1	1,31	0,85	1,08	0,76	0,82	1,02	0,59	0,42	0,73	0,66	0,74	0,57	0,60	0,36
TA.1	0,29	0,25	0,30	0,24	0,30	0,35	0,31	0,18	0,28	0,21	0,22	0,18	0,29	0,16
TA.2	0,10	0,34	0,09	0,29	0,12	0,47	0,01	0,12	0,05	0,24	0,07	0,23	0,03	0,27
TC.1	23,62	18,73	22,91	16,82	5,86	13,88	34,17	23,18	20,63	20,88	25,89	18,25	26,00	22,39
TC.2	0,46	1,51	0,44	1,80	0,18	1,45	0,96	2,89	0,52	2,39	0,63	2,14	1,15	5,36
S.1	5,38	1,58	5,10	1,40	1,64	2,47	7,32	1,50	4,69	2,12	5,56	1,52	5,80	1,05
S.2	5,47	1,47	5,15	1,29	2,69	2,47	7,33	1,50	4,69	2,06	5,56	1,62	6,02	1,05
SP.1	30,54	13,94	26,93	11,95	19,14	21,88	25,22	11,39	20,40	13,13	21,23	11,96	27,58	7,84
SP.2	2,46	2,85	2,22	2,76	1,25	2,66	1,22	1,30	1,88	2,45	1,59	1,72	1,44	1,32
SP.3	12,45	28,43	11,63	21,41	-0,65	20,64	19,65	34,25	13,04	29,09	13,28	22,30	12,42	28,04
I.1	0,43	0,16	0,46	0,18	0,27	0,17	0,55	0,20	0,55	0,21	0,53	0,20	0,61	0,19
I.2	0,26	0,23	0,22	0,20	0,12	0,22	0,30	0,24	0,26	0,26	0,28	0,25	0,37	0,22
BS.1	171,68	23,12	151,69	33,85	128,68	31,66	193,50	16,38	109,84	6,44	95,93	12,96	87,26	24,36
BS.2	50,92	4,30	151,25	33,79	107,35	22,23	132,48	40,30	109,84	6,45	95,87	12,99	86,95	24,32
BS.3	0,39	0,05	1,26	0,24	0,11	0,01	0,86	0,10	1,05	0,07	0,79	0,12	1,13	0,28
SM.1	119,35	24,34	133,73	24,77	102,21	25,49	72,95	17,15	43,58	13,19	71,57	23,07	35,18	16,23
SM.2	6047,40	1592,48	2248,75	278,03	2798,80	1211,21	2997,35	542,19	687,60	118,77	794,70	146,02	273,20	21,52
SM.3	8,99	18,80	5,91	19,52	10,33	24,51	4,84	26,24	11,56	25,57	6,73	22,40	6,19	24,98
MC.1	2,57	1,77	2,36	2,22	2,65	1,67	0,96	2,07	1,40	1,92	1,56	1,49	0,74	2,06
MC.2	2,43	0,92	2,18	0,89	1,83	0,74	-0,02	0,73	1,60	0,60	1,58	0,63	2,51	1,03
LS.0	108,15	2,07	131,77	5,20	121,84	0,60	138,62	2,52	105,81	2,37	77,76	1,03	106,18	12,75
TS.1	46,04	0,41	34,83	0,45	43,58	7,49	52,16	1,76	47,41	1,13	64,99	0,18	75,62	4,85
TS.2	289,90	60,84	106,00	2,00	120,80	4,29	326,00	16,25	198,75	6,91	132,00	0,00	328,35	22,07

4. Analysis Results

The Table 4 reports the regression analysis results. Only significant value of coefficient estimate are reported.

Table 4. Regression analysis results

	USA	JAPAN	UK	CANADA	GERMANY	ITALY	FRANCE
FDS.1	2,224e-03** (7,333e-04)	2,421e-03*** (4,915e-04)	2,781e-03** (1,068e-03)	2,446e-03** (8,404e-04)		4,361e-03. (2,545e-03)	2,963e-03* (1,438e-03)
FDS.2	-2,224e-03** (7,521e-04)						
FDS.3	3,406e-03*** (7,104e-04)		3,270e-03** (1,051e-03)		4,379e-03* (1,860e-03)		
P.1	9,704e-04***	2,640e-03***	-7,806e-04***		-5,188e-04*	3,760e-03.	

	(1,210e-04)	(3,919e-04)	(1,905e-04)		(2,444e-04)	(2,169e-03)	
P.2	-2,712e-03***	-1,431e-03**	1,073e-03***		1,400e-03***		-2,246e-03***
	(1,197e-04)	(5,308e-04)	(2,673e-049)		(3,058e-04)		(5,660e-04)
P.3	6,199e-04***	-1,123e-03***	1,847e-04.	-8,123e-04***	-3,406e-04*	-2,005e-03***	-3,297e-04.
	(6,674e-05)	(7,917e-05)	(1,108e-04)	(1,098e-04)	(1,330e-04)	(4,070e-04)	(1,958e-04)
P.4	-4,513e-03.	-8,242e-03***	-8,237e-03*				
	(2,393e-03)	(1,849e-03)	(3,930e-03)				
R.1	-4,033e-03***	-3,308e-03***	-3,513e-03***	-1,250e-03***	-5,029e-03***	-5,233e-03***	-3,873e-03***
	(1,181e-04)	(5,810e-05)	(2,078e-04)	(1,119e-04)	(2,706e-04)	(6,524e-04)	(2,283e-04)
R.2	2,901e-03***	1,101e-03***	1,832e-03***	1,032e-03***	3,054e-03***	2,316e-03***	1,756e-03***
	(1,228e-04)	(6,079e-05)	(2,158e-04)	(1,101e-04)	(2,983e-04)	(6,923e-04)	(2,512e-04)
R.3	1,478e-08***	1,993e-03***	2,699e-03***				
	(2,970e-04)	(1,945e-04)	(6,658e-04)				
G.1	3,378e-02***	5,822e-02***	6,814e-02***	2,310e-02***	4,087e-02***	1,227e-01***	7,214e-02***
	(1,692e-03)	(2,562e-03)	(2,851e-03)	(1,793e-03)	(4,438e-03)	(1,691e-02)	(5,010e-03)
TA.1	1,866e-01***	3,395e-01***	1,014e-01***	4,048e-02***	3,015e-01***		1,742e-01***
	(5,387e-03)	(5,276e-03)	(7,911e-039)	(4,895e-03)	(1,244e-02)		(1,269e-02)
TA.2	1,549e-02***						6,178e-02***
	(3,729e-03)						(1,009e-02)
TC.1	-1,055e-03***	-4,782e-04***	-7,364e-04***	-1,080e-03***			
	(7,605e-05)	(4,342e-05)	(1,252e-04)	(1,183e-04)			
TC.2	1,744e-03*	2,228e-03***		3,033e-03***			1,703e-03.
	(7,473e-04)	(2,829e-04)		(7,825e-04)			(9,869e-04)
S.1	2,574e-02***	2,965e-02***	3,871e-02***	3,684e-02***	2,460e-02***	3,047e-02**	-6,815e-03*
	(2,138e-03)	(3,364e-03)	(2,938e-03)	(1,030e-03)	(3,960e-03)	(9,602e-03)	(2,990e-03)
S.2	9,467e-03***	-1,010e-02**	-9,875e-03**	5,119e-03***			3,551e-02***
	(2,284e-03)	(3,400e-03)	(3,272e-03)	(1,294e-03)			(2,884e-03)
SP.1	1,088e-03***	1,481e-03***	1,043e-03***		5,741e-04**	1,255e-03*	1,025e-03***
	(9,281e-05)	(7,936e-05)	(1,620e-04)		(2,033e-04)	(5,808e-04)	(1,948e-04)
SP.2	-1,787e-02***	1,238e-02***	-1,333e-02***	-1,107e-02***	-1,229e-02***	-9,046e-03*	-1,776e-02***
	(4,786e-04)	(7,602e-04)	(7,594e-04)	(5,413e-04)	(1,134e-03)	(4,439e-03)	(1,700e-03)
SP.3	-1,539e-04***	-1,937e-04***			-1,592e-04.		-2,001e-04*
	(4,288e-05)	(2,581e-05)			(8,524e-05)		(1,009e-04)
I.1	7,847e-02***		4,559e-02**	1,044e-01***	-4,693e-02**	9,607e-02**	
	(1,665e-02)		(1,472e-02)	(1,640e-02)	(1,678e-02)	(3,388e-02)	
I.2	8,951e-02***	7,673e-02***	9,412e-02***	3,206e-02**	1,074e-01***		6,969e-02***
	(1,254e-02)	(1,160e-02)	(1,375e-02)	(1,199e-02)	(1,368e-02)		(1,475e-02)
BS.1		6,525e-04*		4,766e-04*	-8,377e-01**		
		(2,876e-04)		(1,888e-04)	(2,819e-01)		
BS.2	-5,617e-03.			-7,642e-04.	8,396e-01**		
	(3,028e-03)			(4,601e-04)	(2,825e-01)		
BS.3	6,285e-01*	-9,149e-02*			-3,398e-01.		
	(2,458e-01)	(3,602e-02)			(1,940e-01)		
SM.1	5,912e-04*	-6,379e-04***		-2,806e-04**			
	(2,808e-04)	(7,207e-05)		(1,055e-04)			
SM.2	-1,300e-05**	-1,390e-05.					
	(4,295e-06)	(7,137e-06)					
SM.3		2,136e-04***					
		(3,784e-05)					
MC.1		2,108e-03***					
		(6,249e-04)					
MC.2		-3,304e-03**					
		(1,242e-03)					
LS.0		2,020e-03***			-3,572e-03*		
		(3,225e-04)			(1,768e-03)		
TS.1		-3,048e-03***					

		(7,913e-04)					
TS.2	4,456e-04**					1,091e-03.	
	(1,450e-04)					(5,904e-04)	
N. Obs	24.400	32.320	6.100	12.260	3.880	700	3.180
Adjusted R ²	0,31	0,50	0,34	0,44	0,42	0,47	0,45

Note. Dependent variable: D. The first number is the estimate and the second in brackets is the standard error.

The coefficient estimate is significantly different from zero at: 0 ‘***’; 0,001 ‘**’; 0,01 ‘*’; 0,05 ‘.’.

The analysis shows that the debt choices for the firms in UK and France are based only on the variable Firm Fundamentals. Otherwise for the firms in USA, Canada, Japan, Germany and Italy, the debt choices are based also on the variable Economic and Financial Conditions and the variable Institutional Conditions with different relevance.

The determinant Asset (TA) is statistically significant and relevant for the firms in G-7 countries except for the firms in Italy. The analysis finds a positive relationship between firm’s debt level and the determinant with regard to its measuring-indicators in all countries. Two are the main reasons: first, debt is a primary source to finance investment in asset; second, asset are usually used as a collateral debt because provide guarantees to creditors due their liquidity.

The determinant Industry (I) is statistically significant and relevant for the firms in all G-7 countries. The analysis finds a positive relationship between firm’s debt level and the determinant with regard to its measuring-indicators in all countries except in part in Germany (with regard I.1). The relationship is explained mainly due to the fact that investments and financing needs tend to be the same in the industry and, thus, the choices about debt level tend to be homogeneous among firms.

The determinant Size (S) is statistically significant and relevant for the firms in all G-7 countries. The analysis finds a positive relationship between the firm’s debt level and the determinant with regard its measuring-indicators in all countries. The relationship is explained to the fact that firm’s size are usually considered by the investors a good indicator about the firm’s capabilities to face debt and its obligations.

The determinant Growth (G) is statistically significant and relevant for the firms in all G-7 countries. The analysis found a positive relationship between firm’s debt level and the determinant with regard its measuring-indicators in all country. Two are the main reasons: first, debt is a one of the mainly source to finance the firm’s growth over time; second, firm’s growth opportunities are a good indicator about the firm’s capabilities to face debt and its obligations.

The determinant Stock Price (SP) is statistically significant and relevant for the firms in all G-7 countries. The analysis found a positive relationship between firm’s debt level and its price volatility (SP.1) while negative with ratios price/book value and price/earning (SP.2 and SP.3) in all countries. The positive relationship is due to the fact that the increase (decrease) in price indicates greater (lower) firm’s growth prospects and therefore greater (lower) debt capacity. Otherwise the negative relationship could be due to the fact that the higher the price compared to book value and earnings, the greater the manager’s propensity to finance the firm’s activities through equity rather than debt.

The determinant Profitability (P) is statistically significant and relevant for the firms in all G-7 countries. The analysis finds a positive relationship between firm’s debt level and its ROI (P.1) for the firms in USA, Japan and Italy while negative for the firms in UK and Germany. Otherwise there is a positive relationship between debt level and ROA (P.2) for the firms in UK and Germany, while negative for the firms in USA, Japan and France. There is also a positive relationship between debt level and ROE (P.3) for the firms in USA and UK, while negative for the firms in Canada, Japan, Germany, France and Italy. Finally, there is a positive relationship between the debt level and the change in enterprise value (P.4) for the firms in USA and UK. The analysis finds discordant results with regard to the relationship between firm’s debt level and its performance in line with the literature. The causes of these findings may be many. One possible interpretation is due to the self-financing on the one hand, and the financing of investment on the other hand. Therefore, the negative relationship is due to the fact that higher are the firm’s performances, greater is the self-financing and then lower is the debt level. Otherwise the positive relationship is due to the fact that higher is the debt level, greater are sources to invest and then higher are the firm’s performances.

The determinant Financial Deficit and Surplus (FDS) is statistically significant and relevant for the firms in all G-7 countries. The analysis finds a positive relationship between the firm’s debt level and its net cash-flow

investing (FDS.1) and financing (FDS.3) in all countries while it's negative with net cash-flow operating (FDS.2) only for firms in USA where measuring-indicator is statistically significant. The positive relationship is due to the fact that debt is a primarily source to cover firm's financial needs. The negative relationship could be explained considering that for firms in USA the net cash-flow from operations are used to finance the firm's activities reducing its debt reliance.

The determinant Risk (R) is statistically significant and relevant for the firms in all G-7 countries. The analysis finds a positive relationship between the firm's debt level and the ratio of EBIT to interest expenses on debt (R.2 and R.3) in all countries. Therefore, higher is the EBIT compared to interest expenses on debt, higher is the firm's capabilities to cover the cost of debt and, lower is the firm's risk and then greater is the firm debt capabilities. Otherwise the analysis finds a negative relationship between firm's debt level and the ratio of EBITDA to interest expenses on debt (R.1) in all countries except in UK. In this case the negative relationship is not related to the firm's risk but to the firm's self-financing capability due to the high EBITDA.

The determinant Taxation (TC) is statistically significant for the firms in USA, UK, Canada and Japan. In this context the determinant refers to the firm's corporate taxes by distinguished between the income taxes that firm should pay in order to its tax rate (TC.1) and the income taxes that the firm pays on the basis of the fiscal and accounting policies adopted (TC.2). The analysis finds a negative relationship between firm's debt level and its tax rate on income, while a positive relationship with income taxes paid on the bases of its fiscal and accounting policies adopted. The positive relationship is due to the real application of the tax shield on the base of the accounting and fiscal policies adopted by the firm. Otherwise the negative relationship is due to the fact that higher is the tax rate on income, higher is the potential taxes to be paid by firm and greater is the risk of losses on income and then lower is the firm's debt capacity.

The determinant Country Bank Sector Conditions (BS), is statistically significant for the firms in Germany, USA, Japan and Canada. In this context the determinant's correlation sign is defined based on the measuring-indicators' weigh in regression equation. The analysis finds a positive relationship between firm's debt level and determinant in USA while negative in Canada, Japan and Germany. The difference is probably due to the different role of the bank system in firms financing. Therefore, the negative relationship is due to the fact that in bank-oriented economy, the banking system controls about debt level of the firm are rigorous to the limit point, in some cases, to be the bank itself to define the firm's optimal debt level. In this case the bank tends to keep down the debt level of the firm. Otherwise the positive relationship is due to the fact that in market-oriented economy, the bank system finances the firm but the market usually to make judgments about the degree of firm's solvency. This interpretation seems confirmed also by the average level of debt that is higher for the firms in USA, where the correlation is positive, than firms in Canada, Germany and Japan, where the correlation is negative.

The determinant Country Stock Market Conditions (SM), is statistically significant for the firms in USA, Canada and Japan. Also in this case the determinant's correlation sign is defined based on the measuring-indicators' weigh in regression equation. The analysis finds a positive relationship between firm's debt level and determinant in USA while negative in Canada and Japan. In market-oriented economy the relationship is positive where is the market to evaluate the firm and its choices about debt level. Otherwise in bank-oriented economy the relationship tend to be negative where is the bank to evaluate and to define the debt level of the firm.

The determinant Country macroeconomic conditions (MC), is statistically significant only for the firms in Japan. The analysis finds a positive relationship between firm's debt level and the GDP (MC.1) while negative with inflation rate (MC.2). The positive relationship is due to the fact that the GDP growth enables the development of firms and therefore the need for funding sources to support the development. Otherwise the negative relationship is due to the fact that the growth of inflation reduces the value of the debt at the expense of the creditors.

The determinant Country Taxation System is statistically significant for the firms in Japan, Italy and USA. In this context the determinant refers to the taxation system of the country's reference of the firm with regard to the general both debtholders and shareholders personal taxes differently from the determinant taxation (TC) that refers to the firm's corporate taxes. The analysis finds a positive relationship between firm's debt level and the determinant in USA and Italy while negative in Japan. The sign of the correlation is mainly due to the real tax, net of evasion and avoidance, on bondholders and equityholders. Therefore, if the taxation on bondholders is less than equityholders, the relationship is positive otherwise it is negative.

The determinant Country Legality and Bureaucracy System (LS) is statistically relevant for the firms in Japan and Germany. The analysis finds a positive relationship between firm's debt level and the determinant in Japan

while negative in Germany. It is mainly due to the differences in the institutional system between two countries.

5. Conclusions

The theoretical hypothesis of the paper is that the firm's debt level choices are functions of systemic and dynamic combination of provisions over time about, on the one hand, the firm's characteristics and its expected performances and, on the other hand, the economic and capital markets performances and the institutional system quality of the country's reference. Therefore the firm has to define the debt level considering not only the perspectives about firm's fundamentals, related to its characteristics and performances, but also perspectives about economic and capital market performances and institutional system development of the country's reference.

The analysis finds evidence of the theoretical hypothesis in USA, Canada, Japan, Germany and Italy with different relevance while not in UK and France where the firm's debt choices are based only on its fundamentals.

The empirical model proposed is suitable for extensions. It can be improved by identifying new determinants in the three variable and/or differences determinants' measuring-indicators without this changes the logical and methodological approach.

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