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THE FINANCING OF GREEK ENTERPRISES BEFORE AND DURING THE CRISIS*

Dimitra Dimitropoulou
Economic Analysis and Research Department

Anastasia Koutsomanoli-Filippaki
Economic Analysis and Research Department

Evangelos Charalambakis
Economic Analysis and Research Department

Georgios Aggelis
Economic Analysis and Research Department

1 INTRODUCTION

The crisis had a major impact on Greek enterprises, heavily affecting their access to external financing. The aim of this paper is to review the evolution of corporate financing, taking into account that the unhindered and adequate access of enterprises to external funds is a sine qua non condition for supporting the economy as a whole and achieving economic recovery.

The effects of the crisis on financing are largely attributable to developments in the financial sector. Banks' constrained lending capacity (owing to their limited access to the interbank market, their effort to repair their balance sheets and the increase in non-performing loans) led to a decline in bank credit to the private sector, especially to non-financial corporations, which resulted in a large number of businesses facing difficulties in financing their activities (Bank of Greece, 2014). This reduction in bank lending, combined with the difficulty in issuing bonds and shares due to the negative valuation of Greek enterprises on account of the debt crisis, resulted in an insufficiency of funding resources, which is one of the major problems facing Greek businesses, as well as one of the most crucial challenges for their viability. However, the reduction in financing observed amid the crisis is also attributable to the fact that businesses limited their production activity, postponing their immediate investment plans because of the uncertain economic climate, which resulted in a decrease in their borrowing requirements.

In the case of Greece, corporate financing is highly based on bank lending (Bank of Greece, 2014). According to a European Central Bank report on corporate financing (European Central Bank, 2013a), Greece, together with Italy and Cyprus, is one of the countries presenting the highest percentage of bank lending (in total financing) both before and during the crisis. Specifically, the average share of bank lending in total financing in Greece was 70.6% in 2003-2008, compared with 49.1% for the euro area as a whole, and this percentage remained particularly high during the crisis (2009-2012), at 72.9% (compared with 49.9% for the euro area). The largely bank-based structure of financing partly reflects the fact that the majority of Greek businesses have a small or medium size, which does not allow for easy access to alternative sources of debt financing. According to a European Commission report (European Commission, 2012), SMEs in Greece account for 70.2% of the value added in the Greek economy and 85.2% of employment in the private non-financial sector, while the corresponding shares in the European Union are much smaller (58.1% of total value added and 67.4% of total employment). The difficulty of small and medium-sized enterprises to access bank lending during the crisis, according both to ECB data and to a study by Bain & Company and the IIF (2013), has considerably

* The views expressed in this study are those of the authors and do not necessarily reflect those of the Bank of Greece. Any errors or omissions are the responsibility of the authors. The authors would like to thank Heather Gibson and Daphne Nicolitsas for their invaluable comments and remarks.

increased in other EU countries besides Greece, especially in those subject to economic adjustment programmes.

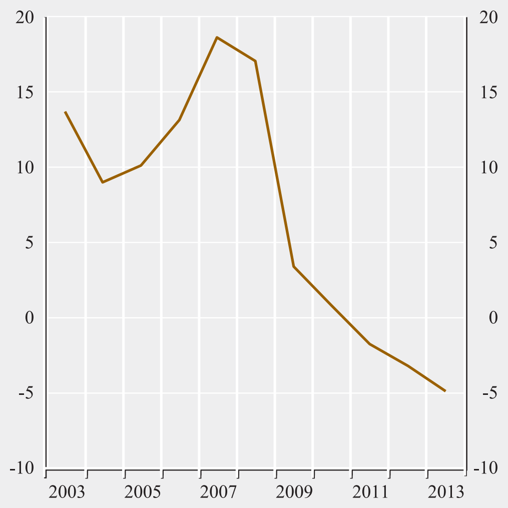
In light of the importance of bank lending for the financing of Greek enterprises, it becomes clear that the decline in the growth rate of bank credit observed over the past few years is expected to have a significant impact on firms' profitability and viability. In particular, according to Bank of Greece aggregated data (see Chart 1), the annual rate of change in bank lending to Greek enterprises fell sharply after 2008, while in 2011 it turned negative for the first time.

The aim of this study is to examine the evolution of the financing of Greek enterprises over the period 2003-2011, in particular to analyse the effect of the crisis on firms' access to debt financing. To this end, it uses data from the balance sheets and profit and loss accounts of more than 20,000 enterprises of all sizes across all (non-financial) sectors of the economy. Our analysis tries to answer the following questions: How has the crisis affected corporate financing? What are the characteristics of the firms that have been hit more strongly? How has financing evolved for firms of different sizes, i.e. have small, medium and large-sized enterprises been equally affected? Which are the sectors whose access to debt financing has been impaired the most as a result of the crisis? Our analysis demonstrates that the crisis has deeply affected corporate financing, with a marked decline observed since 2009, which was broadly based across sectors and across short- and long-term financing. This development followed a period of strong credit expansion, which peaked in 2008 and favoured mostly large enterprises. The latter proved also to be more resilient, as they managed to maintain access to some form of debt financing in the midst of the crisis.

This study is structured as follows: Section 2 presents the database, as well as the main variables used in the analysis. Section 3 provides an analysis of financing for the sample as a whole, for enterprises of different size, as well as a sectoral breakdown. The last section summarises the main conclusions of the study.

Chart 1 Evolution of bank credit to enterprises (aggregated data)

(loans to non-financial corporations by domestic MFIs - % rate of change)



Source: Bank of Greece.

2 DESCRIPTION OF THE SAMPLE AND DEFINITION OF VARIABLES

The data of this study are taken from the ICAP database, which comprises balance sheet and profit and loss account data for almost 60,000 Greek firms. The main advantage of this database is that it contains data both for firms listed on the Athens Exchange and for non-listed firms that are predominantly small and medium-sized enterprises, i.e. the backbone of the Greek economy.

Our sample covers the period 2003-2011 and comprises non-financial corporations. This means that it excludes banks, insurance companies, leasing companies, investment holding companies and other firms that provide financial services, as well as corporations that are legal entities in public law and their activity is outside the scope of this research. After excluding firms for which full data series are not available for the period under review, firms with zero sales, as well as outliers, we have ended up with a sample of 208,566 observations for the period 2003-2011. In general, it is observed that the total number of enterprises increases over time until 2007 and then it gradually decreases at an increasingly faster pace, before returning in 2011 to its 2004 levels. This change occurs at similar rates in all sectors and, as a result, the sectoral composition of the sample remains broadly stable before and after the crisis. However, it should be noted that the change in the size of the sample is due not only to business closures/openings, but also to changes in the coverage of the ICAP database.

Apart from the analysis of the whole sample, this study also aims at a sectoral analysis of corporate financing. To this end, enterprises have been classified by sector of activity on the basis of the two-digit NACE code.[1] According to this classification, our sample is divided into seven sectors or branches of economic activity: agriculture (383 enterprises); mining (128); construction (2,402); manufacturing (5,864); services (10,846); trade (9,481) and electricity, water and waste management (126). Services, trade and manufacturing, taken together, make up the bulk of the sample. In addition, in order to study the impact of firm size on financing, firms are grouped in three categories according to the book value of their assets, i.e. small, medium-sized and large firms, with each group equally (33.3%) represented in the sample.

One of the main features of our sample is that a high percentage of enterprises, namely 34% of all observations, have zero debt obligations for the period under review. As a result, our analysis is considerably influenced by the characteristics of firms with zero leverage and for this reason we divide our sample into two categories: firms with some sort of external debt financing and firms with no debt obligations.[2] Thus, we first discuss the characteristics of enterprises as a whole and then focus on enterprises with some sort of debt financing.

The analysis is based on the use of index numbers, as derived from firms' financial statements. More specifically, debt financing is defined as the sum of short-term and medium- to long-term debt obligations, while the debt ratio is defined as total debt obligations (both short-term and long-term) to total assets. To analyse the type of debt obligations of an enterprise, we use the ratio of long-term debt to total assets and the ratio of short-term debt to total assets, respectively. The database does not provide more detailed data about the type of debt obligations (corporate bonds, bank credit, etc). However, given that the majority of the sample consists in small and medium-sized enterprises without access to other forms of debt financing, we can assume that the bulk of debt obligations concerns bank credit (Hyz, 2011). The capital structure ratio or leverage ratio is defined as the debt-to-equity ratio of an enterprise, while the equity financing ratio is defined as the equity-to-total assets ratio and the internal financing ratio as the retained earnings-to-total assets ratio. Finally, the study also includes an analysis of profitability and productivity indices, which are defined as the

Table 1 Number of enterprises in the sample

Year	Number of enterprises
2003	21,211
2004	23,323
2005	24,587
2006	24,897
2007	24,957
2008	24,712
2009	23,294
2010	22,264
2011	19,321

Source: Calculations based on data from the ICAP Database.

1 NACE is the system of statistical classification of economic activities in the European Union (Eurostat, 2008).

2 We assume that an enterprise belongs to the category of enterprises with some sort of external debt when it has debt obligations for at least half of its life span in the sample. For example, a company with a 10-year life span in the sample will be identified as having some sort of external debt if it has debt obligations in at least five years. Otherwise, we assume that it belongs to the category of enterprises with no debt.

ratio of pre-tax earnings or operating expenses to total assets, respectively.

3 THE STRUCTURE OF CORPORATE FINANCING BEFORE AND AFTER THE CRISIS

Chart 2 shows the evolution of certain key index numbers for the entire sample of Greek enterprises in 2003-2011. We can observe that the size of the average enterprise in our sample on the basis of total assets increases over time, both before and during the crisis. For the pre-crisis period, this change is probably due to the fact that enterprises grew through investment in the context of an expanding economy, while over the crisis period the closing down of businesses, mostly small ones,

Chart 2 Evolution of key firm characteristics for the entire sample in the period 2003-2011

Source: Calculations based on data from the ICAP Database.
Note: The charts show averages for the entire sample over the period 2003-2011.

Table 2 Key characteristics of enterprises with debt and enterprises with no debt over the period 2003-2011

	Assets (in euro)	Equity/ assets	Pre-tax profits/ assets	Retained earnings/ assets	Operating expenses/ assets	Number of observations
Enterprises with debt	10,300,000	0.353	0.017	-0.088	0.944	142,067
	(96,200,000)	*(0.335)*	*(0.191)*	*(0.554)*	*(0.874)*	
Enterprises with no debt	2,331,933	0.509	0.021	-0.223	1.047	66,499
	(11,400,000)	*(0.599)*	*(0.409)*	*(1.129)*	*(1.170)*	

Note: The table shows the averages for the period 2003-2011. The standard deviation is indicated in italics and in parentheses.
Source: Calculations based on data from the ICAP Database.

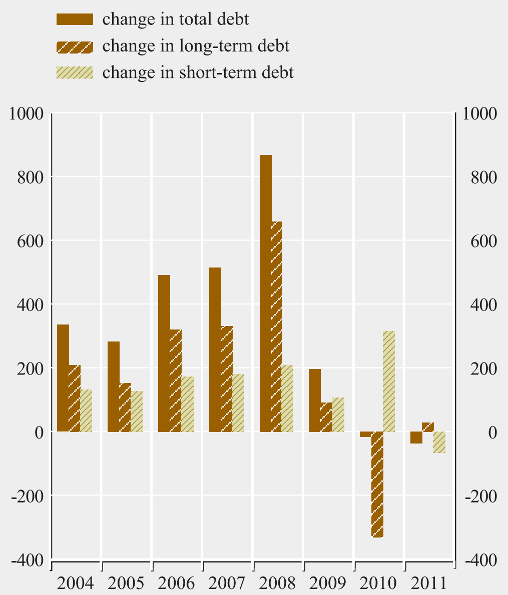
which suffered the greatest losses due to the recession, as well as mergers and acquisitions, have most probably led to an increase in the average size of the enterprises in our sample. Regarding the performance of Greek enterprises, average profitability appears to be positive until 2010, albeit on a downward path after 2008, while in 2010 it turns negative. Retained earnings appear to be negative on average throughout the period under review, deteriorating further after 2009. In terms of efficiency, the ratio of operating expenses to total assets follows a downward course throughout the period under review. The decrease in operating expenses becomes stronger after 2008, as firms, in the absence of demand, try to increase their profitability by cutting costs. At the same time, the average leverage ratio (debt-to-equity) for the entire sample shows an upward trend until 2007 and continuous declines thereafter.

As mentioned in Section 2, almost two thirds of Greek firms in the sample have some sort of debt financing in the period 2003-2011. Of these, around 42% are large, 36% are medium-sized and 22% are small. By contrast, the category of enterprises with no debt consists for the most part (58%) of small-sized enterprises. Enterprises with debt are mainly active in trade (34%), services (31%) and manufacturing (26%). Table 2 compares the key characteristics of enterprises that have access to debt financing and of those that do not resort to borrowing. In general, the table shows considerable differences between the two categories of enterprises. Specifically, enterprises with no debt appear to be less efficient, showing, on average, lower profitability and a higher operating expenses ratio, compared with enterprises that have access to debt financing. At the same time, enterprises that do not resort to borrowing are, on average, better capitalised on the basis of the equity-to-assets ratio. This could possibly be due to the fact that these enterprises rely on equity financing rather than debt financing.

The aim of the present study is to monitor changes in corporate financing after the crisis. For this reason, the analysis that follows focuses exclusively on firms with some sort of debt financing. Chart 3 shows the evolution of the total, short-term and long-term borrowing of firms. The strong credit expansion that the Greek economy experienced before the crisis is clearly visible in the chart. The positive change in total borrowing for the pre-crisis period is mainly driven by long-term borrowing, while short-term borrowing shows more moderate developments over time. The effect of the crisis on firms' debt financing becomes apparent from 2009 onwards, a period during which the positive change in firms' total borrowing continues but its size is considerably smaller compared with 2008 and mainly reflects the respective change in long-term debt. In general, we observe that Greek enterprises preserved their access to debt financing during the first years of the crisis.

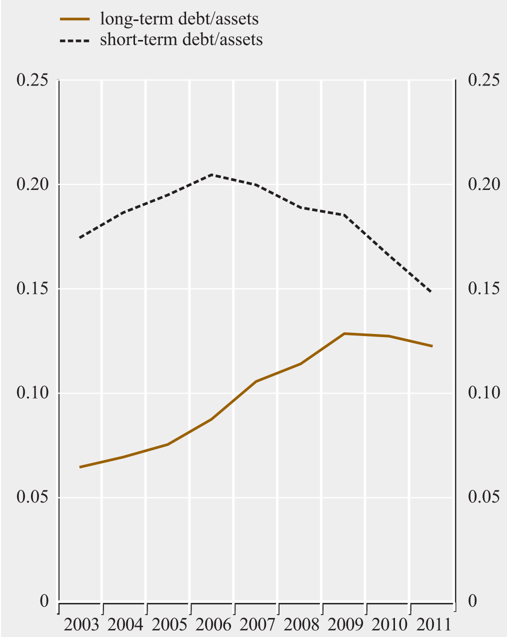
Chart 3 Evolution of the change in firms' total, long-term and short-term debt

(in thousand euro)



Source: Calculations based on data from the ICAP Database.
Note: The change in total debt for a given year t is defined as the difference between total debt in year t and total debt in year t-1. Changes in short-term and in long-term debt are defined accordingly. The sample includes only firms with some sort of debt financing.

Chart 4 Evolution of firms' short-term and long-term debt



Source: Calculations based on data from the ICAP Database.
Note: The chart shows the evolution of the average short-term debt-to-assets ratio and the average long-term debt-to assets ratio for firms with some sort of debt financing in the period 2003-2011.

However, the situation changes dramatically in 2010, when the change in total borrowing turns negative for the first time, and a slowdown is observed in firms' total borrowing. This stems exclusively from the sharp fall in long-term borrowing, while short-term borrowing, despite its considerable increase, does not offset the negative effect of the decrease in long-term borrowing. In 2011, the access of enterprises to debt financing becomes even more difficult, as the crisis starts to affect their short-term borrowing as well. That same year, the slight positive change in long-term borrowing is almost exclusively due to a corporate bond issue of €1 billion by OTE (Hellenic Telecommunications Organisation); excluding this company from the sample, the negative trend in total borrowing continues through 2011 as well.

Chart 3 shows that in 2010, in addition to a sharp decline in borrowing, the effects of the crisis also manifest themselves as a substitution of long-term with short-term borrowing. This is likely a result of firms' effort to meet their financing needs through short-term borrowing, against the background of uncertainty about the future course of the economy and postponement of their investment plans. This is also confirmed by the findings of the European Central Bank's survey on access to finance of small and medium-sized enterprises (ECB, 2013b), suggesting that in recent years Greek enterprises take out a loan mainly to finance working capital rather than investment. However, this substitution of long-term with short-term borrowing is interrupted in 2011, when the crisis starts having an adverse impact on firms' short-term borrowing as well. In Chart 4, which shows the evolution of short-term and long-term debt as a ratio to total assets respectively, we can observe that the long-term debt ratio increases until 2009 and then decreases marginally, whereas the short-

Table 3 Key financial aggregates of enterprises with some sort of debt financing

	Assets (in euro)	Debt/ assets	Equity/ assets	Debt/ equity	Pre-tax profits/ assets	Retained earnings/ assets	Operating expenses/ assets	Number of observations
2003	7,791,478	0.238	0.372	1.267	0.037	-0.070	1.055	14,781
	(83,100,000)	*(0.203)*	*(0.297)*	*(2.120)*	*(0.176)*	*(0.492)*	*(0.946)*	
2004	8,100,494	0.255	0.364	1.358	0.033	-0.071	1.058	16,168
	(78,700,000)	*(0.208)*	*(0.313)*	*(2.248)*	*(0.199)*	*(0.473)*	*(0.962)*	
2005	8,427,370	0.269	0.344	1.517	0.018	-0.088	0.996	17,008
	(80,700,000)	*(0.212)*	*(0.356)*	*(2.451)*	*(0.243)*	*(0.573)*	*(0.902)*	
2006	9,252,654	0.292	0.336	1.686	0.024	-0.080	0.970	16,896
	(85,200,000)	*(0.215)*	*(0.308)*	*(2.610)*	*(0.193)*	*(0.547)*	*(0.868)*	
2007	10,500,000	0.305	0.334	1.785	0.031	-0.079	0.953	16,800
	(96,600,000)	*(0.221)*	*(0.344)*	*(2.715)*	*(0.144)*	*(0.660)*	*(0.830)*	
2008	12,000,000	0.303	0.344	1.691	0.022	-0.073	0.933	16,519
	(106,000,000)	*(0.226)*	*(0.325)*	*(2.617)*	*(0.146)*	*(0.474)*	*(0.844)*	
2009	12,200,000	0.313	0.358	1.627	0.008	-0.082	0.859	15.776
	(108,000,000)	*(0.224)*	*(0.339)*	*(2.550)*	*(0.210)*	*(0.516)*	*(0.822)*	
2010	12,400,000	0.293	0.360	1.451	-0.009	-0.114	0.830	15,108
	(109,000,000)	(0.230)	(0.339)	(2.534)	(0.185)	(0.490)	(0.821)	
2011	13,000,000	0.270	0.374	1.234	-0.020	-0.145	0.813	13,011
	(114,000,000)	*(0.236)*	*(0.385)*	*(2.411)*	*(0.197)*	*(0.724)*	*(0.808)*	
2003-2008	9,381,476	0.278	0.348	1.557	0.027	-0.077	0.993	98,172
	(89,100,000)	*(0.216)*	*(0.326)*	*(2.483)*	*(0.187)*	*(0.542)*	*(0.893)*	
2009-2011	12,500,000	0.293	0.364	1.450	-0.006	-0.112	0.835	43,895
	(110,000,000)	*(0.231)*	*(0.353)*	*(2.509)*	*(0.198)*	*(0.578)*	*(0.818)*	

Note: The table presents the average values per year for enterprises with some sort of debt financing, with the standard deviation in italics and in parentheses.
Source: Calculations based on data from the ICAP Database.

term debt ratio registers a negative trend already since 2006, which becomes even more marked during the crisis.

Table 3 shows the evolution of certain key financial indicators for the sample of enterprises with some sort of borrowing. Overall, a gradual worsening in the financial condition of enterprises is visible, as a result of the crisis. Specifically, the profitability of enterprises, as reflected in the ratio of pre-tax profits to total assets, has been on a downward trend since 2007, while in 2010 the average profitability turns negative for the first time. Firms' negative profitability as a result of the economic crisis has possibly affected their access to debt financing. At the same time, we can see that throughout the period under review firms' retained earnings-to-assets ratio is negative on average, registering a considerable downward trend, which becomes much more pronounced after 2009. In the same period, firms try to cope with lower profitability by cutting their operating costs, which decrease over time, especially after 2008. It should be stressed though that those enterprises that managed to keep their profitability in positive territory during the crisis (see Table 4) and which represent about one third of the total sample, show a positive retained earnings-to-assets ratio both in the pre-crisis period and during the crisis. In addition, these enterprises, besides their higher

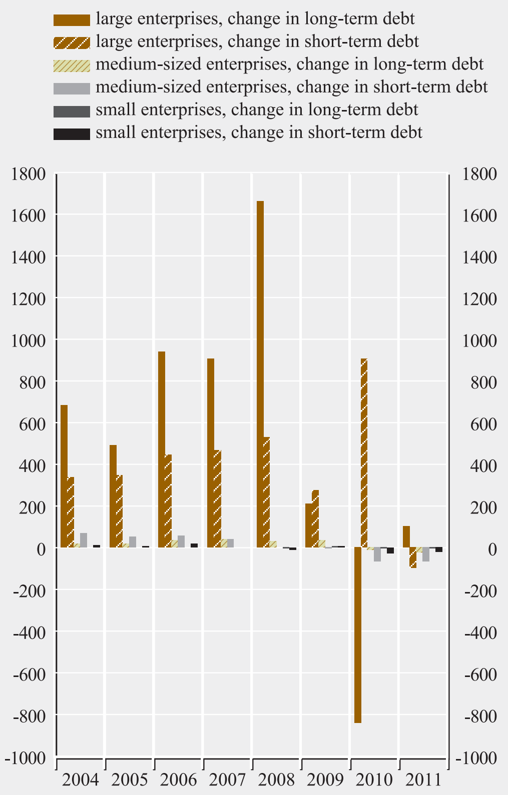
Table 4 Key characteristics of enterprises with positive/negative profitability during the crisis in 2009-2011

	Debt/ assets	Equity/ assets	Debt/ equity	Pre-tax profits/ assets	Retained earnings/ assets	Operating expenses/ assets
Enterprises with positive profitability	0.253	0.410	1.224	0.066	0.051	0.997
	(0.199)	*(0.236)*	*(1.908)*	*(0.087)*	*(0.152)*	*(0.854)*
Enterprises with negative profitability	0.314	0.340	1.576	-0.044	-0.197	0.750
	(0.243)	*(0.399)*	*(2.778)*	*(0.227)*	*(0.691)*	*(0.785)*

Note: The enterprises that had positive profits in the years 2009, 2010 and 2011 are defined as enterprises with positive profitability. The table presents the average values for the period 2009-2011, with the standard deviation in italics and in parentheses.
Source: Calculations based on data from the ICAP Database.

Chart 5 Evolution of the change in long-term and short-term debt

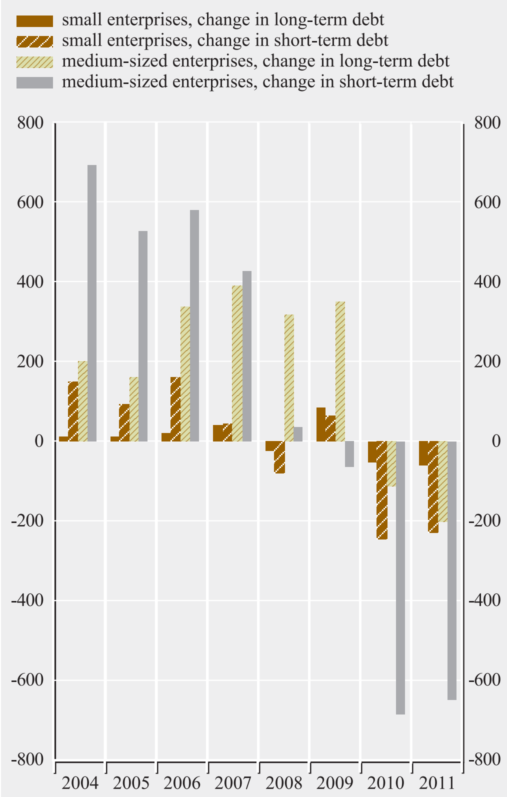
(in thousand euro)



Source: Calculations based on data from the ICAP Database.
Note: The change in debt for a given year t is defined as the difference between short-term or long-term debt in year t and short-term of long-term in year t-1. The sample includes only firms with some sort of debt financing.

Chart 6 Evolution of the change in the long-term and short-term debt of small and medium-sized enterprises

(in thousand euro)

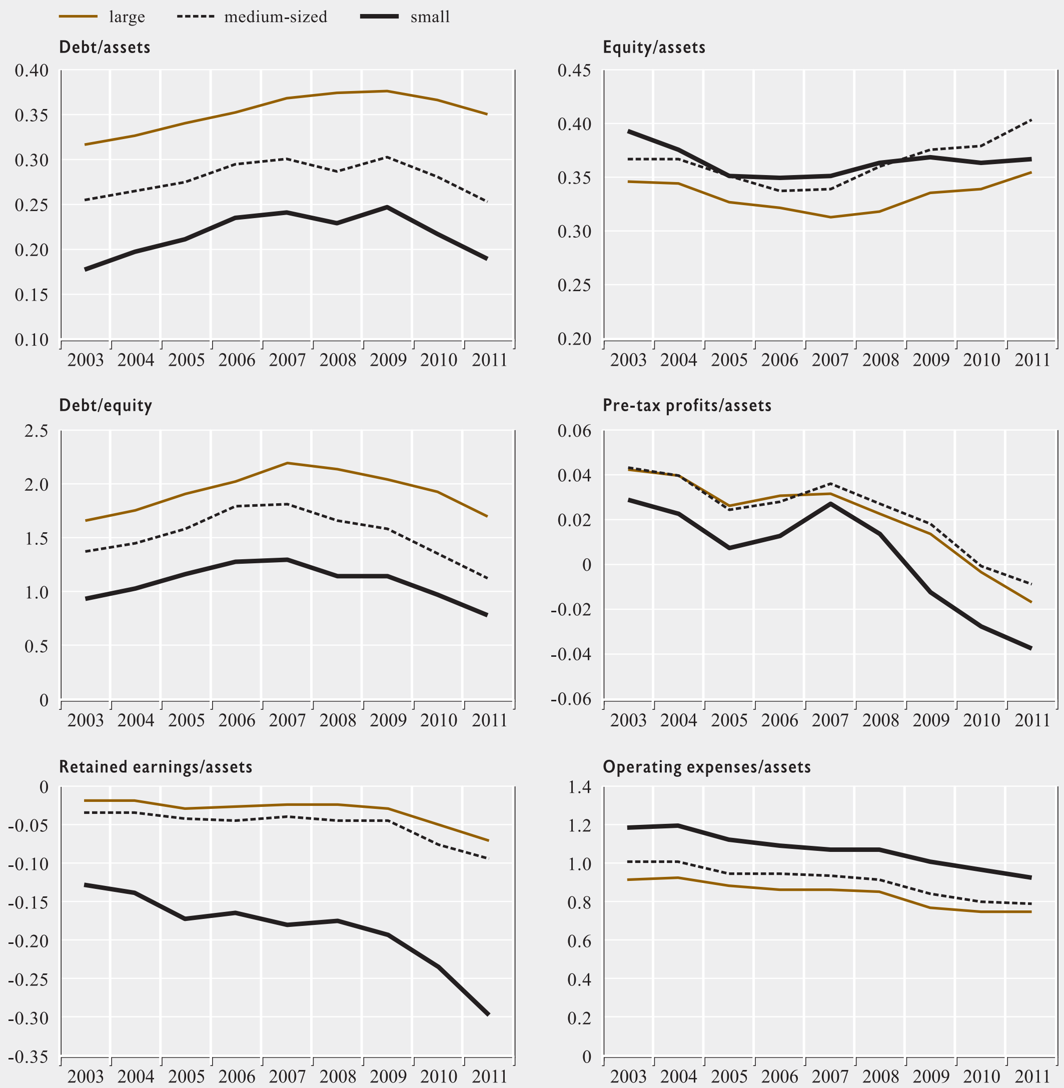


Source: Calculations based on data from the ICAP Database.
Note: The change in debt for a given year t is defined as the difference between short-term or long-term debt in year t and short-term of long-term in year t-1. The sample includes only firms with some sort of debt financing.

profitability, have a lower debt-to-assets ratio and are better capitalised compared with enterprises that did not manage to maintain their profitability during the crisis.

As regards the financing of enterprises as a whole, the leverage ratio (debt-to-equity) shows a strong upward trend over the credit expansion period and until 2007, while afterwards this trend is reversed and the average leverage ratio reaches a trough in 2011. The significant drop in the average leverage ratio is attributable both to the decrease in total borrowing (as shown by the declining path of the total loans-to-assets ratio which falls sharply after 2009) and to the increase in firms' equity financing, as shown by the upward trend of the capitalisation index from 2009 onwards. Generally we observe that amidst the crisis and due to the absence of debt financing, Greek enterprises turned to equity financing. Charts 5 and 6 show the evolution of corporate borrowing broken down by size of enterprise. We see that

Chart 7 Evolution of key characteristics of small, medium-sized and large enterprises in the period 2003-2011

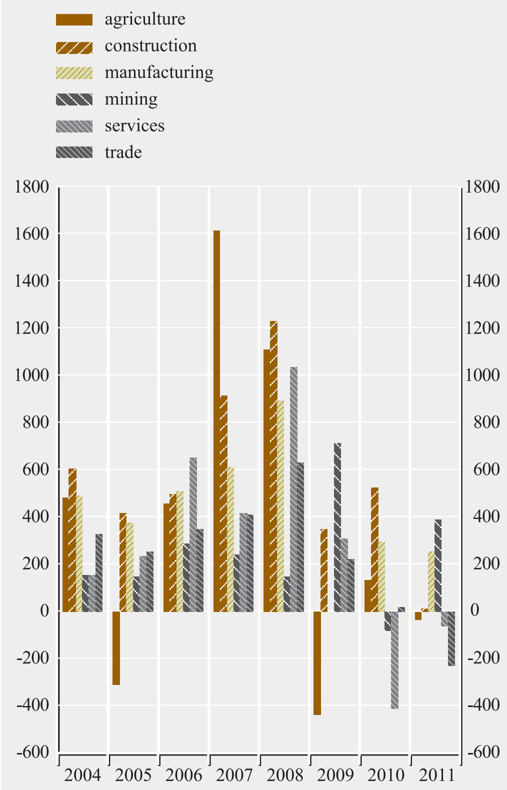


Source: Calculations based on data from the ICAP Database.
Note: The charts show the averages of the respective indices for small, medium-sized and large enterprises with some sort of debt financing in 2003-2011.

the pre-crisis credit expansion benefited mostly large enterprises, whose total debt registers the greatest growth. This is also supported by the considerably higher leverage ratio of large enterprises relative to small and medium-sized enterprises. In addition, most of SME's debt financing consists of short-term debt, as opposed to large enterprises which have, on average, a considerably higher ratio of long-term debt to total assets. As indicated by the charts, from 2009 onwards debt financing becomes visibly more difficult for all enterprises in the sample, and especially for small and medium-sized enterprises: both their long-term and short-term debt show negative changes after 2009. Moreover, according to a National Bank of Greece survey on SMEs (Mylonas and Tzakou-Lambropoulou 2013) for the first half of 2013, one third of all SMEs needed financing but were not able to obtain it (because either they did not apply for a loan or did apply and were rejected). By contrast, once their long-term borrowing starts declining due to the crisis, large enterprises manage to offset this decline by increasing their short-term borrowing. Therefore, unlike small and medium-sized enterprises that seem to be completely cut off from debt financing due to the crisis, large enterprises continue to have access to some sort of financing, thus covering at least their short-term financing needs and most likely pushing back their long-term plans. This is possibly due to large companies' higher profitability and lower operating expense ratio compared with the small enterprises in our sample, which probably makes them more eligible bank customers. Moreover, large enterprises have access to sources of financing other than bank credit, such as corporate bond or equity financing (see Chart 7). Additionally, Chart 7 shows that, during the crisis, medium-sized enterprises have been attempting to make up for their reduced access to debt financing by increasing their equity, whereas in the case of small enterprises, whose profitability was already negative since 2009 and has deteriorated considerably over the crisis, the equity-to-assets ratio remains practically unchanged after 2008.

Chart 8 Evolution of the change in firms' total debt by sector of activity

(in thousand euro)

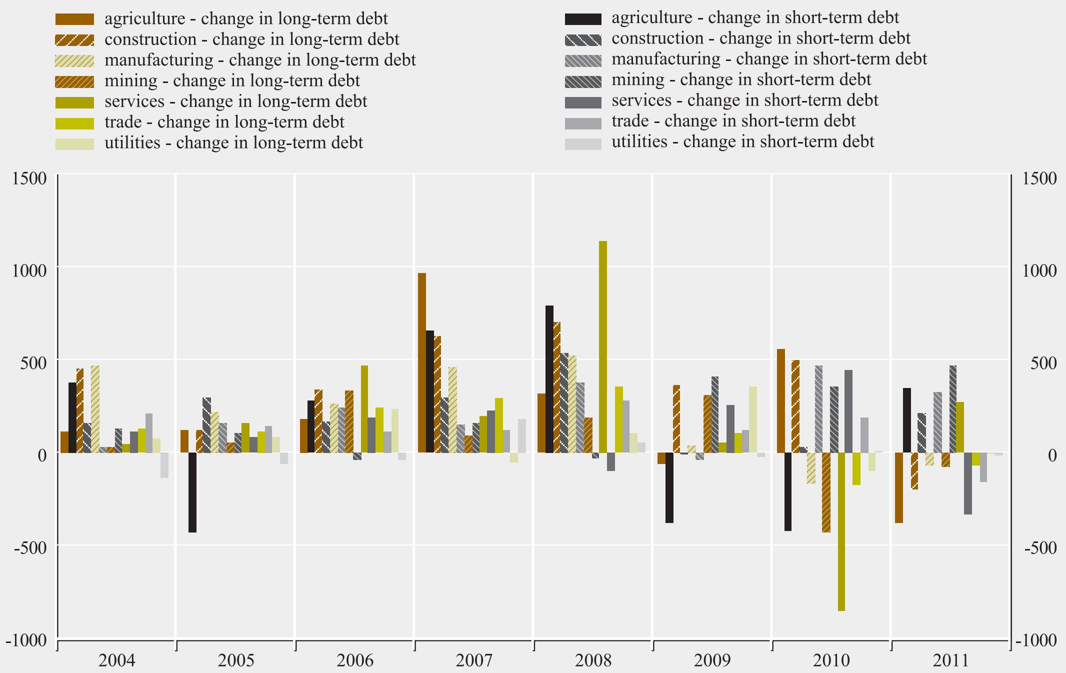


Source: Calculations based on data from the ICAP Database.
Note: The change in total debt for a given year t is defined as the difference between total debt in year t and total debt in year t-1. The sample includes only firms with some sort of debt financing. Sectoral classification is based on NACE codes.

Chart 8 illustrates the evolution of total borrowing by sector of economic activity, while Chart 9 provides a further breakdown between long-term and short-term borrowing. The sectoral breakdown broadly confirms the picture drawn for the whole sample, while at the same time revealing some variations across sectors. In the pre-crisis period, as can be expected, most sectors present relatively stable credit expansion that peaks in 2008. Of particular interest is the agricultural sector, which registers a very marked increase in corporate borrowing in 2007 and 2008, stemming primarily from the fish farming industry that increases considerably its debt obligations over that period. Also, until 2008, the construction sector records significant positive changes in its

Chart 9 Evolution of the change in firms' short-term and long-term debt by sector of activity

(in thousand euro)



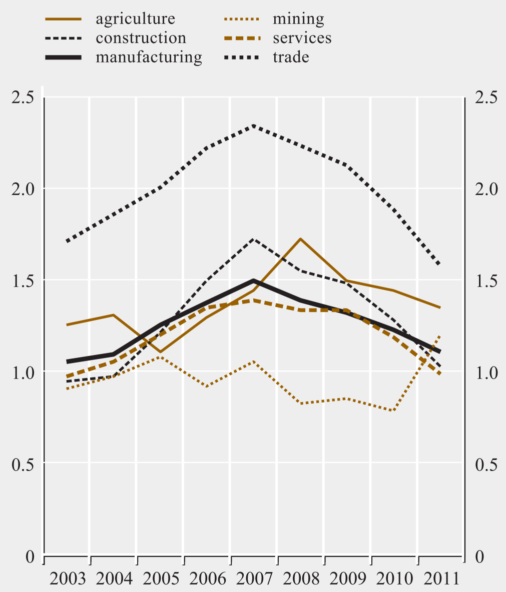
Source: Calculations based on data from the ICAP Database.
Note: The change in debt for a given year t is defined as the difference between long-term or short-term debt in year t and long-term or short-term debt in year t-1. The sample includes only firms with some sort of debt financing. Sectoral classification is based on NACE codes. According to NACE, utilities are electricity, water and waste management companies.

total borrowing. After the onset of the crisis, most sectors, such as manufacturing, mining, services and transport, register a negative change mostly in their long-term borrowing. On the other hand, the agricultural and construction sectors present a positive change in their long-term borrowing in 2010. In 2011, long-term borrowing seems to decline across all sectors (with the exception of the services sector, reflecting the effect of the above-mentioned OTE bond issue). In several cases, however, this decline has been offset by the positive change in short-term borrowing. By contrast, the trade sector shows decreases in both its short- and long-term borrowing in 2011, suggesting that enterprises in this sector face serious difficulties in obtaining debt financing.

Chart 10 provides a sectoral breakdown of the evolution of the leverage ratio. As a consequence of the strong credit expansion in all sectors, leverage ratios increase over time until 2007 or even 2008, with the exception of the mining industry whose leverage ratio peaks in 2005 and remains close to 1. In all other sectors, leverage ratios are well above 1 in 2007, which is consistent with the pre-crisis credit expansion. It is worth noting the pattern for the trade sector, which had significant and growing dependency on borrowed funds already since 2003: its leverage ratio rises throughout the pre-crisis period and reaches 2.3% in 2007, while after the onset of the crisis it decreases gradually and in 2011 returns close to its 2003 levels.

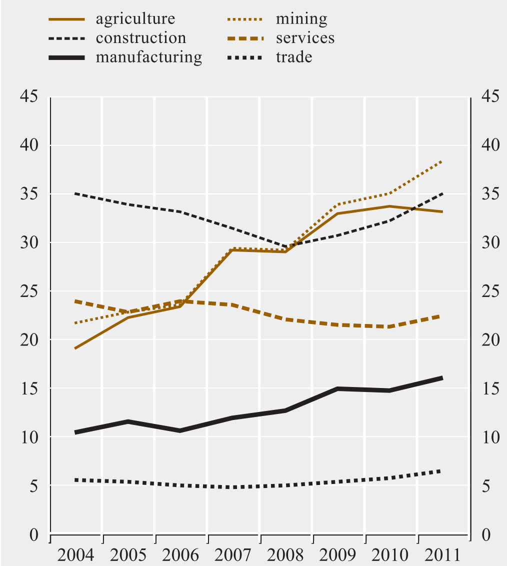
A similar pattern can also be observed in the remaining sectors from 2009 onwards. Debt financing decreases gradually and equity increases, resulting in a decline in leverage across almost all sectors. Moreover, we can conclude that in the pre-crisis period firms did

Chart 10 Evolution of firms' debt-to-equity ratio by sector of activity



Source: Calculations based on data from the ICAP Database.
Note: The chart shows the averages for each sector of activity in the period 2003-2011.

Chart 11 Evolution of firms' degree of concentration by sector of activity



Source: Calculations based on ICAP Database data.
Note: The chart shows the degree of concentration of each sector, as measured by the sum of the market shares of the three largest enterprises in each sector.

not use their profitability (which was on average positive until 2009) to build up capital buffers to accommodate future financing needs. This conclusion is supported by the evolution of retained earnings, which remain negative for all sectors throughout the period under review. It should be noted, however, that this does not apply for firms that managed to maintain positive profitability amid the crisis and which had also, on average, a positive retained earnings ratio throughout the period. The largest proportion of such firms belongs to the trade sector, followed by agriculture and manufacturing.

The strong increase in leverage ratios over the pre-crisis period is possibly attributable to the economy's growth path that favoured investment, as well as to credit expansion combined with low financing costs that enabled enterprises to borrow at low cost. During the crisis period, when access to credit becomes more difficult and profitability often turns negative, firms resort to equity financing. At the same time, due to the economic downturn and the strains experienced by Greek enterprises, restructuring efforts can be observed in all sectors of the economy. Specifically, Chart 11 shows the evolution of the degree of concentration by sector of economic activity, as measured by the sum of the market shares of the three largest enterprises in each sector. Overall, the degree of concentration tends to increase across sectors throughout the period under review, including during the crisis. This tendency is particularly evident in agriculture and mining, which register the greatest decreases in the number of enterprises and the greatest increases in concentration over time. However, as changes in market structure and concentration take time to materialise, it is probably too early to identify a clear upward trend in the degree of concentration as a result of the crisis. Moreover, given that mergers and acquisitions tend to be procyclical and, more often than not, occur in economic upturns during which there are more financing possibilities, we cannot draw a safe conclusion about whether this trend will continue or gain momentum as a result of the crisis.

4 CONCLUSIONS

The conclusions drawn from the above analysis is that the crisis has significantly affected the borrowing profiles of enterprises and led to an adjustment of the amount and form of financing for all enterprises in the sample. In the case of large enterprises, the tightening of financing conditions from 2009 onwards translated into a substitution of short-term borrowing for long-term borrowing. By contrast, small and medium-sized enterprises faced more serious difficulties in their access to finance and tried, to the extent possible, to substitute equity financing for debt financing. However, empirical evidence (Athanasoglou, Asimakopoulos and Siriopoulos 2006) suggests that financing the growth of Greek enterprises exclusively with the use of internally generated resources is extremely difficult. Therefore, the impact of the credit squeeze is very significant for the viability of the Greek business sector.

In conclusion, enterprises' size, profitability and low operating expenses were major factors in preserving access to financing, against a backdrop of increased risk aversion and shortage of financing.

Regarding the financing of individual sectors, we can see that, as a result of the crisis, borrowing dropped in almost all sectors, with the trade sector being most seriously affected, as both its short-term and its long-term borrowing have turned negative. At the same time, the leverage ratios decline gradually across all sectors from 2009 onwards, after increases over the credit expansion period. Consequently, in sectors that are highly dependent on borrowed funds, such as trade, enterprises face greater difficulties in surviving, compared to sectors with lower leverage and sounder financial condition.

The developments that ensued from the crisis in relation to enterprises' financing opportunities are likely to accelerate the economy's sectoral restructuring. Since the lack of financing and the accumulation of losses compress firms' ability to implement their business plans and meet their cash needs, a number of firms may be heading towards failure. We already observe in our sample a significant decrease in the number of enterprises and a slight rise in concentration, which continue also during the crisis. Although it is too early to draw safe conclusions about whether the crisis has led to higher market concentration, the ongoing restructuring could help the enterprises that survive to gain better access to debt financing, with their larger size and improved profitability. In addition, given that the potential for credit expansion may remain limited in the short run, firms should turn to alternative sources (such as bonds, shares, private placements and other financial instruments) in order to finance their growth.

To sum up, the sectoral analysis of the evolution of corporate financing in the present study provides a first indication about a redistribution of financing resources and the possible implications of the crisis for the restructuring of the economy. However, in order to draw more definite conclusions, a more detailed sectoral analysis is needed, as well as data on the financial condition of enterprises after 2011, when the crisis escalated, which were not available at the time of writing.

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