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What Are the Causes of the Growing Trend of Excess Savings of the Corporate Sector in Developed Countries?

An Empirical Analysis of Three Hypotheses

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Abstract

This paper analyzes annual accounting data for a sample of 5,000 publicly traded manufacturing firms from Germany, France, Italy, Japan, and the United Kingdom. The analysis uses data from 1997 to 2011 and finds an increasing trend of excess savings (defined as the difference between gross saving and capital formation) and a gradual decline of gross capital formation. This trend is accompanied by a steady deleveraging process and a decrease in the share of operating assets in total assets. This process is more acute among the more credit constrained, the more volatile, and the less dynamic firms.

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What are the causes of the growing trend of excess savings of the corporate sector in developed countries? An empirical analysis of three hypotheses

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I. Introduction

Aggregated statistics of many major developed countries show that the excess of gross savings over capital formation in the non-financial corporate sector has been increasing at least since 2001 onwards. According to some studies at the aggregate level (IMF, 2006, OECD, 2007), this trend in the excess savings (ES) of non-financial corporations could be due to several factors that have a positive impact on earnings and a negative impact on investment, and also due to the lower propensity to pay dividends in recent years (Fama and French, 2001). Non-financial corporations utilized ES in three ways: debt reduction, cash accumulation, and mergers and acquisitions.

The buildup of liquidity resulting from the ES played a role in the recent global financial crisis that started in 2007. For example, Pozsar (2011) shows how such liquidity helped to meet a significant portion of the demand for assets issued by the deregulated financial system. This demand was positively driven by two factors: on the one hand, the emphasis on safety and liquidity of capital by investment mandates, and on the other, the relative scarcity of safe assets that satisfied such mandates, e.g., guaranteed bank deposits and US Treasuries (Krishnamurthy and Vissing-Jorgensen, 2010).

The need for a better understanding of the ES becomes even more relevant because it is related to the sluggish economic recovery in developed countries. On the one hand, according to recent studies and data, the growing trend of the ES accelerated in 2008, partly due to the credit crunch set off by the financial crisis (IILS, 2011, Kahle and Stulz , 2011, Campello, Graham and Harvey, 2011).[1] On the other hand, the low corporate investment recovery since 2009 has been frequently mentioned as the main culprit responsible for the slow recovery in economic activity and employment.[2] Finally, irrespective of the current economic conditions,

[1]See The Economist,`Why are firms saving so much?´, 1/7/2010.

[2]Wall Street Journal, `What will it take for companies to unlock their cash hoards?`, 28/05/2011, Financial Times, `Corporate Finance: Rivers of Riches´, 22/5/2011. See also CNBC `Cash-Hoarding Companies Put Economy, Stock Rally at Risk`, 28/03/2011, The New York Times, `Companies Still Hoarding Tons of Cash´, 17/09/2010, The Economist, `Show us the money´, 1/7/2010., Wall Street Journal, `Jittery Companies Stash Cash´, 3/11/2009

the relevance of the ES is evident when one reflects upon the growing role of the corporate sector as far as income generation is concerned, over the previous three decades (Ellis and Smith, 2010).

Despite its importance, there have not been any studies that analyze the ES using firm-level data to identify what firm characteristics explain the ES observed in aggregate level studies. This paper fills that gap and contributes to the literature by analyzing the ES using firm-level annual accounting data for a sample of industrial firms in Germany, France, Italy, Japan and the UK in the period 1997-2011. First, we formally test for the existence of a trend in the ES and its components (gross savings and capital formation), and show how the three applications of the ES (debt reduction, acquisitions, and liquidity accumulation) evolved over time. Second, we identify the factors that could explain the growth trend of the ES in the last fifteen years. In particular, we seek to examine the role played by credit constraints, volatility in the business environment, and growth in operating activities in shaping the observed aggregate trend.

The analysis of firm-level data confirms the existence of an increasing trend of the ES for the total sample and for 9 of the 10 size deciles. This trend was accompanied by decline in capital formation, decrease in debt, and increase in the share of non-operating assets in total assets.

The econometric results show that: (i) the ES is related to credit rationing problems because financial-constrained firms increased their ES at a significantly higher rate than the rest of the firms; (ii) the ES growth rate was significantly higher among companies operating in a more volatile operating environment; (iii) the ES growth rate was higher among those high-growth firms that experienced the largest slowdown; and (iv) the increasing trend of the ES and the decreasing trend of Gross Capital Formation is robust to alternative specifications and sets of control variables.

The structure of the paper is as follows. Section II describes the database, defines the main variables of interest and shows some basic descriptive statistics. In Section III, we statistically test for the existence of a trend in the ES, and describe the evolution over time of the ES, its components (gross savings and capital formation), and its main applications. Section IV provides a brief literature review that allows us to frame the analysis and identify three main testable hypotheses regarding the factors driving the growth of the ES. Section V

gives a detailed description of the methodology by which these hypotheses are tested. The results are presented in Section VI, and its implications are discussed in Section VII**.**

II. Data and construction of variables

To perform the firm-level analysis we assemble a dataset that includes annual accounting data for a set of publicly traded firms in Germany, France, Italy, Japan and the UK, since 1997 until 2011. The data comes from the Worldscope database. In accordance with the financial literature (Bates, Kahlen and Stulz, 2009, Custodio, Laureano and Ferreira, forthcoming), our database includes only industrial firms. The selection of industrial firms was carried out according to the variable "General Industry Classification", which differentiates between manufacturing, services, transport, banking, insurance and other financial activities.

Table 1 summarizes the accounting definition of the main variables used in the study. Table 2 provides descriptive statistics of the sample for each country presenting the mean, median, 25th and 75th percentiles, standard deviation and number of observations (firm-years) of each of the six variables listed above. Table 3, meanwhile, shows the number of firms by country and year for which data are available for the key variable ES.

III. Excess savings (ES) and their applications over time

Figure 1 illustrates the evolution of the variables of interest in the period from 1997 to 2011. Each panel of the figure shows the time series of the median and size-weighted mean (mean weighted by total assets) of the variables of interest. We used both weighted mean and median measures to illustrate that the trends detected are representative of the aggregate trends (captured by the size-weighted mean) and that these aggregate trends are not driven by outliers (the median is less sensitive to the behavior of outliers). Unless otherwise noted, the description that follows refers to the evolution of the size-weighted average.

Figure 1 displays the growing trend in excess savings for the entire sample. It is also evident that the ES fluctuates with the business cycle, and these fluctuations can be explained mainly by the cyclical variations in gross capital formation, which are greater than the cyclical variations of gross savings. The amplitude of the fluctuations in the ES is always greater for the size-weighted mean than for the median. This suggests that the ES of big companies

fluctuates more than that of small companies. These patterns are true for any given country (see the Appendix, Figures 1A to 1E).

In contrast to the sideways fluctuation of gross capital formation, gross savings show a steady increase over time that results in a positive trend in excess savings. Interestingly, when looking at the median trends, gross savings has a slight negative trend, and the positive trend in the ES is explained by the sharp negative trend in gross capital formation. This suggests that the propensity to generate increasing excess savings is not determined exclusively by a secular drop in investment or by an unusual growth of gross savings, but by a combination of these two factors with varying impact across the firms sampled.

Overall, our sample of firms exhibit the very same trends as those found in studies that use national accounting data (IMF, 2006, OECD, 2007), suggesting that our sample is representative of the aggregate behavior.

Figure 1 also illustrates the changes in the balance sheet (stock variables) generated by the trends in the ES (flow variable). First, the companies in the sample experienced a sustained fall in the indebtedness, which declined from 70.5 to 58 percent of total assets. This can be explained by the higher availability of internal funds from the ES. In addition, the recurrence of financial crises during the sample period might have shifted the corporate sector preferences towards internal funds and away from external sources of financing. Our firm-level data thus confirms the findings of previous studies based on national accounting data that identify the increase of excess savings with a reduction of indebtedness as one of the main uses of the ES (IMF, 2006).

However, the changes in the balance sheets of the sampled firms were not just limited to the capital structure alone; they also changed the composition of the assets held. From Figure 1, it can be observed that the proportion of long term non-operating assets, which includes holdings in affiliated companies and other similar investments, increased consistently from 14 to 22 percent. Liquidity holdings displayed little change, and even came down slightly.

Some comments are needed regarding the differences in size-weighted averages and medians. The time series of the size-weighted average and the median are greatly similar for the ES, non-operating assets, and debt. For these series, the size-weighted average is always higher than the median, which seems to indicate that larger firms had consistently higher values than smaller firms.

In contrast, median cash holdings move in a direction different from that of the size-weighted average. The former starts from a level much lower than the latter and both series converge at a midpoint. This suggests that the cash hoarding was a priority among smaller firms compared to larger firms.

We also tested the statistical significance of trend of ES illustrated in Figure 1 by regressing ES on a trend dummy in a panel model with firm and year fixed effects (two-way fixed-effects model) for the entire sample and for each size decile. Table 4 (Panel A) shows the results and confirms that there is a positive trend in the ES for the total sample and in 8 of the 10 size deciles. Panels B and C show the same model as in Panel A using capital formation and gross saving as dependent variables instead. Panel B and C provide a first hint as to the primary causes of the positive trend in ES. Whereas the trend in gross saving is heterogeneous across size deciles, there is a significant negative trend in capital formation for the entire sample and for 8 out of 10 deciles. Therefore, from the results in Table 4 we can conclude that there is a positive trend in the ES that is driven by a negative trend in gross capital formation.

To test the robustness of our results, we controlled for the effects that business cycles had on these trends. Panels D to F replicate the same regressions as Panels A to C, but including a dummy variable that equals 1 during those years when the national-aggregate investment (of the country to which the firm belongs) suffered a contraction. Our results are robust to the inclusion of this control variable. The number of deciles for which ES shows a positive trend improves to 9 (Panel D), and the conclusions regarding the evolution of gross savings and gross capital formation remain the same (Panels E and F).

IV. Existing literature and hypotheses building

To the best of our knowledge, there is no theoretical model that specifically addresses the phenomenon of the ES in the corporate sector. However, there is a well-established literature in corporate finance related to the investment, free cash flow, and cash holdings that provides some insights and allows us to draw some testable hypothesis for our empirical study. Following this literature, we could identify three factors that are related to the ES: (i) financial constraints, (ii) volatility of the operating environment, and (iii) growth prospects.

First, financial constraints affect financing and investment decisions. Constrained firms should systematically save a fraction of its cash flow to safeguard against future investment

needs (Almeida, Campello, and Weisbach, 2004). Therefore, we should find that the ES is larger among financially constrained firms.

Second, the ES is related to the volatility of the operating environment. Previous empirical studies show that increased volatility of sales, costs and earnings negatively impacted investment (Von Kalckreuth, 2000, using a sample of German firms, Baum et. al. using a sample of US manufacturing firms), while other studies have found an increase in cash ratios is concentrated among firms in industries that experienced the greatest increase in idiosyncratic volatility (Bates, Kahle, and Stulz, 2009). Moreover, firms' liquidity management is affected by macroeconomic uncertainty (Baum et. al, 2009). Irvine and Pontiff (2008) show that, over the past four decades, cash-flow volatility has increased due to more intense product market competition. As a result, we should find an increasing trend in the ES together with larger ES among those firms facing a more volatile operating environment.

Finally, the ES is related to growth prospects. As described by Jensen (1986, 1989) companies in mature and declining industries tend to have low growth, large and positive cash flow, and low profitable investment opportunities. Unless management is wasting cash-flow through unsound investment projects or paying out dividends, we should find that the ES is larger among low-growth firms.

V. Methodology

We thus have three mutually not exclusive hypotheses concerning the factors driving the rise on the ES:

(i) Excess savings are mainly generated by those firms facing financial constraints.

(ii) Excess savings are mainly generated by those firms facing a volatile operating environment.

(iii) Excess savings are caused by low-growth firms that lack profitable investment opportunities.

We test whether these hypotheses explain the positive trend in the ES from 1997 to 2011. To do this we estimate a two-way fixed effects model, using alternatively ES and Gross Capital Formation as dependent variables and including as regressors a trend variable; variables that

measure financial constraints, volatility of the business environment, and growth; and interaction terms between these variables and the trend variable. The variables that measure financial constraints, growth volatility, and growth are constructed following the existing literature. The coefficients of the variables will determine whether the positive trend in the ES remains positive and significant after controlling for firm-characteristics, whether these firm-characteristics significantly explain the ES, and whether the positive trend in the ES is different for firms with different characteristics. By repeating the same set of regressions using Gross Capital Formation as a dependent variable we will be able to identify whether these firm-characteristics significantly affect companies' investment behavior, thus driving the ES. Therefore, we will be able to link the empirical evidence related to the investment literature to our main topic in this paper, the excess savings.

Financial constraints were captured by seven different measures: (1) Whited-Wu (2006) Index; (2) Kaplan-Zingales (1997) Index; (3) the natural logarithm of total assets (with smaller firms facing more financial constraints); (4) the square of the natural logarithm of total assets, to address the quadratic relationship found between firm size and rationing by Hadlock and Pierce (2010); (5) return over assets (with less profitable firms facing more financial constraints); (6) a dummy variable that identifies whether the firm pays dividends; (7) a dummy variable that identifies whether the firm has positive earnings[3]. To avoid endogeneity problems, these last three measures are not used when the dependent variable is Excess Savings. Volatility of the business environment is measured by the variation coefficient of five different variables: (1) net sales; (2) net sales growth; (3) Tobin's Q[4]; (4) COGS to sales ratio; (5) the net earnings margin. In all the cases we compute the variation coefficient using a 5-year rolling window of the standard deviation and the mean of each variable. Finally, we used three different variables that measure growth opportunities: (1) net sales growth; (2) Tobin's Q; (3) R&D expenditures over total assets, following Graham (2000) and Fama and French (2002).

We also included a set of control variables that capture the financial management policy of the firms, the level of diversification to non-core activities, and the macroeconomic

[3]

[4]Computed as .

environment. Following Duchin, Ozbas, and Sensoy (2010), the firms' financial management policy was measured by a set of indicators such as indebtedness, short-term indebtedness, liquidity holdings, the ratio between short-term assets and liabilities, debt change, and short-debt change. All these indicators are those current at the beginning of the sample period. Ahn, Denis, and Denis (2006) argue that the level of firms' diversification affect gross capital formation, and therefore ES. We thus use the ratio of non-operating assets to total assets at the beginning of the sample period to control for the level of diversification to non-core activities. Finally, the macroeconomic environment is proxied by a dummy variable that identifies whether aggregate national investment is growing or falling.

The estimated model can be summarized by the following equation:

where Y is alternatively ES and Gross Capital Formation, X is a vector of control variables, Z is a measure of either financial constraints, growth volatility, or growth as described above, and t is a trend variable. Our main focus of attention will be on the coefficients and . will determine whether the trends identified in Table 4 are still present after controlling for firm-characteristics. will inform whether the ES and Gross Capital Formation are explained by financial constraints, growth volatility, and growth. Finally, will determine whether the growing trend in ES and falling trend in Gross Capital Formation are different for firms with different characteristics.

VI. Results

Table 5 shows the effects of financial constraints on ES (Panel A) and on Gross Capital Formation (Panel B). The first finding is that the ES was in general smaller among financially constrained firms: out of the four measures of financial constraints included in Panel A, three measures support this finding. Even though the Kaplan-Zingales Index suggests that financial constrained firms had more ES, the limitations of this index to capture financial constraints are well-known (see Hadlock and Pierce, 2010). The second finding is that there is a positive trend in ES, and that this trend is significantly larger for financially constrained firms. Again, except for the regression using the Kaplan-Zingales Index, all the remaining three regressions support this conclusion. The third finding is that we confirm the existence of a negative trend in the Gross Capital Formation (Panel B), and there is some weak evidence that suggest that the trend was more negative for those firms facing financial constraints. Regarding the effect

of financial constraints on Gross Capital Formation, the results in Panel B are mixed. For some specifications we find that Gross Capital Formation was smaller among financial constrained firms (Kaplan-Zingales, ROA, Dividends, and Earnings), but for others we find the opposite (Whited-Wu Index, and square of total assets).

Table 6 shows the effects of the volatility of the operating environment on ES and on Gross Capital Formation (Panel A and B, respectively). The first finding is that the ES was initially lower for more volatile firms, as shown by the negative and statistical significant coefficient for each of the five measures of volatility. The second finding is that we find a positive trend in ES for the entire sample of firms even after controlling for operating environment volatility, and furthermore, those firms facing a more volatile operating environment had a significant higher positive trend in ES than those firms in a less volatile environment. The third finding is that we confirm a negative trend in the Gross Capital Formation for the entire sample, and there is some weak evidence that suggests that firms with a more volatile operating environment had a significant more negative trend in the Gross Capital Formation. Finally, there is some weak evidence that suggest firms facing a more volatile environment had higher Gross Capital Formation.

Table 7 shows the effect of the growth opportunities on ES (Panel A) and on Gross Capital Formation (Panel B). First, we find that the ES was higher for low-growth firms and that Gross Capital Formation was lower for low-growth firms (for two out of three measures of growth opportunities in the case of Gross Capital Formation). Second, we find that there is a positive trend in ES for the entire sample, and that high-growth firms had a significant more positive trend than low-growth firms. Third, again we confirm the negative trend in the Gross Capital Formation for the entire sample, and we find that high-growth firms had a significant more negative trend in the Gross Capital Formation (for two out of three measures of growth opportunities).

Taking all the evidence together, these results suggest a strong case for convergence on the financial management policy of the firms. We conclude this from the following observations:

- First, contrary to what was expected by the literature, the ES was *smaller* among financially constrained firms. Nevertheless, financially constrained firms had a significant higher ES growth. Figure 2 complements Table 5 and illustrates that indeed convergence is taking place.

- Second, as expected we did find an increasing trend in the ES, but again, contrary to what was expected by the literature, we find a *smaller* ES among those firms facing a more volatile operating environment. Similarly to the analysis of financial constraints, we find that those firms facing a more volatile operating environment had a higher rate of ES accumulation. Figure 3 complements Table 6 and illustrates the aforementioned convergence.

- Finally, just as expected by the literature, we find that ES is larger and Gross Capital Formation is smaller among low-growth firms. Nevertheless, during the period of analysis high-growth firms suffered a reduction of its growth, converging to low-growth firms, and consequently increased ES and reduced its Gross Capital Formation at a significant higher rate (Figure 4).

VII. Conclusions

This paper provides a number of important firm-level facts on the dynamic of ES. We have shown that: (i) the ES is related to credit rationing problems because financial-constrained firms increased their ES at a significantly higher rate than the rest of the firms; (ii) the ES growth rate was significantly higher among companies operating in a more volatile operating environment; (iii) the ES growth rate was higher among those high-growth firms that experienced the largest slowdown; and (iv) the increasing trend of the ES and the decreasing trend of Gross Capital Formation is robust to alternative specifications and sets of control variables.

When analyzing the cross-sectional variation of ES among firms facing financial constraints and volatile operating environment we find that the results are at odds with what existing literature would suggest, having these firms lower (instead of higher) ES. Interestingly, the ES accumulation trend, although positive for the entire sample, was even more positive for exactly those types of firms. When focusing on growth potential, the evidence is in line with the existing literature, showing that low-growth firms had higher ES and lower Gross Capital Formation than high-growth firms. Nevertheless, high-growth firms' growth rate slowed down during the period, and therefore these firms reduced its Gross Capital Formation and increased its ES at a higher rate than low-growth firms.

More generally, our evidence shows that during the sample period there was a significant increase in ES partially driven by a significant decrease in Gross Capital Formation.

Additionally, our data shows that firms facing financial constraints, on a volatile operating environment, and that experienced a growth slowdown played a special role, as they reduced their Gross Capital Formation and increased their ES at a significant faster pace. Nevertheless, it is worth emphasizing that these trends are also present in financially non-constrained firms, in firms facing a low-volatility operating environment, and in high-growth and low-growth firms. These results hold even after controlling the financial management policy of the firms, the level of diversification to non-core activities, and the macroeconomic environment.

One of the objectives of this paper was to shed light on the nature of ES using firm-level data instead of national accounting aggregates. One of the main takeaways is that even though firms' characteristics play a role, the phenomenon is more pervasive than initially expected. The policy message seems to be that although reducing financial constraints, reducing operating volatility, and ensuring investment opportunities for firms will certainly help, it will not solve the problem of the excess savings of the non-financial corporate sector, as firms not facing these challenges are still accumulating excess savings in their balance sheets.

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Table 1
Definition of Variables

Variable	Definition
Gross Savings	$\frac{[Net\ Income_t + Depreciation_t - Cash\ Dividends_t]}{Total\ Assets_t}$
Gross Capital Formation	$\frac{[Fixed\ Capital\ Expenditures_t + \Delta Current\ Assets\ net\ of\ Cash_t]}{Total\ Assets_t}$
Excess Savings	$Gross\ Savings_t - Gross\ Capital\ Formation_t$
Leverage	$\frac{Total\ Liablities_t}{Total\ Assets_t}$
Liquidity Holdings	$\frac{Cash\ and\ Short\ Term\ Investments_t}{Total\ Assets_t}$
Acquisitions	$\frac{\Delta[Non\ Current\ Assets_t - Property, Plant, and\ Equiplment_t]}{Total\ Assets_t}$

This table shows the definition and construction of the main variables of interest

Table 2
Descriptive Statistics
Summary of dispersion and central tendency measures for the main variables, by country.

	Mean	Standard Deviation	p25	p50	p75	Nro. Obs
Total Sample						
Gross Savings	2.91%	13.42%	1.66%	4.69%	7.91%	72,450
Excess Savings	-2.00%	15.11%	-5.91%	-0.22%	4.32%	72,450
Gross Capital Formation	4.93%	11.29%	0.01%	4.72%	10.19%	73,687
Leverage	54.57%	26.28%	38.06%	55.29%	70.25%	73,687
Liquidity Holding	16.47%	15.71%	5.67%	11.88%	21.89%	73,687
Acquisitions	-3.03%	9.00%	-6.15%	-2.92%	-0.06%	73,687
France						
Gross Savings	4.68%	10.44%	3.06%	6.23%	9.46%	7,460
Excess Savings	-2.46%	13.78%	-8.29%	-1.12%	4.47%	7,460
Gross Capital Formation	7.22%	12.99%	1.40%	6.98%	13.60%	7,638
Leverage	61.06%	23.64%	48.07%	61.11%	73.38%	7,638
Liquidity Holding	14.41%	14.25%	4.65%	9.83%	19.13%	7,638
Acquisitions	-2.61%	9.15%	-6.27%	-2.93%	0.46%	7,638
Germany						
Gross Savings	3.10%	20.65%	1.72%	6.06%	9.79%	7,250
Excess Savings	-3.25%	22.31%	-9.03%	-1.13%	5.25%	7,250
Gross Capital Formation	6.42%	13.98%	0.14%	6.67%	13.50%	7,649
Leverage	57.93%	26.08%	41.71%	60.18%	73.57%	7,649
Liquidity Holding	15.48%	18.19%	3.10%	8.57%	20.62%	7,649
Acquisitions	-4.26%	11.05%	-8.04%	-3.97%	-0.39%	7,649
Italy						
Gross Savings	3.66%	8.88%	2.15%	4.93%	7.63%	2,701
Excess Savings	-2.58%	12.18%	-7.85%	-1.57%	3.62%	2,701
Gross Capital Formation	6.37%	11.31%	1.05%	6.17%	12.25%	2,777
Leverage	61.15%	19.59%	48.85%	62.71%	73.98%	2,777
Liquidity Holding	11.72%	12.45%	3.92%	7.71%	14.60%	2,777
Acquisitions	-1.87%	8.88%	-5.59%	-2.63%	1.13%	2,777
Japan						
Gross Savings	3.52%	9.29%	1.77%	4.13%	6.72%	39,666
Excess Savings	-0.04%	10.89%	-3.67%	0.50%	4.29%	39,666
Gross Capital Formation	3.57%	9.32%	-0.38%	3.69%	8.08%	40,239
Leverage	53.18%	22.14%	36.65%	53.88%	69.76%	40,239
Liquidity Holding	17.58%	13.72%	7.92%	13.86%	23.01%	40,239
Acquisitions	-3.07%	6.88%	-5.61%	-2.81%	-0.41%	40,239
United Kingdom						
Gross Savings	0.25%	18.67%	-1.13%	5.43%	9.49%	15,373
Excess Savings	-6.12%	19.74%	-11.58%	-2.19%	4.07%	15,373
Gross Capital Formation	6.37%	12.95%	0.53%	6.09%	12.80%	15,384
Leverage	52.12%	35.99%	34.21%	51.10%	66.04%	15,384
Liquidity Holding	15.93%	19.65%	2.71%	8.46%	20.96%	15,384
Acquisitions	-2.73%	12.09%	-7.09%	-2.84%	1.54%	15,384

Number of observations are firm-year observations. p25, p50, y p75 represent the 25, 50 (median), and 75 percentiles of the distribution. Variable definitions are provided in Table 1.

Table 3
Number of firms by year and country

Year	France	Germany	Italy	Japan	United Kingdom	Whole Sample
1997	494	417	141	1,128	1,173	3,356
1998	541	485	154	1,114	1,144	3,442
1999	540	530	166	1,120	1,047	3,407
2000	560	526	183	2,578	966	4,818
2001	580	591	190	2,888	1,030	5,283
2002	561	551	199	3,127	1,107	5,548
2003	555	538	198	3,119	1,127	5,540
2004	545	528	205	3,111	1,168	5,560
2005	542	530	204	3,248	1,160	5,686
2006	526	525	215	3,234	1,131	5,633
2007	506	515	211	3,236	1,119	5,589
2008	513	516	217	3,171	1,048	5,469
2009	490	507	212	3,075	1,052	5,339
2010	470	476	200	3,016	951	5,116
2011	37	15	6	2,501	150	2,710

This table shows the number of firms reporting non-missing Excess Savings by year and country, as well as for the whole sample.

Table 4
Trends of the Excess Savings, Gross Savings and Gross Capital Formation, by decile of size.
Two-way fixed effects with a linear trend

Variable Dependiente	Whole Sample	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
Panel A. Excess Savings											
Trend	0.00247***	0.0193***	0.00235	0.00685**	0.00480***	0.00308***	0.00199**	0.00138*	0.000617	0.00272***	0.00263***
	(0.000261)	(0.00538)	(0.00285)	(0.00325)	(0.00162)	(0.00119)	(0.000809)	(0.000750)	(0.000878)	(0.000473)	(0.000265)
Constant	-0.0499***	-0.266***	-0.123***	-0.0915***	-0.0705***	-0.0455***	-0.0389***	-0.0209**	-0.0226*	-0.0292***	-0.0232***
	(0.00286)	(0.0315)	(0.0159)	(0.0182)	(0.00829)	(0.00645)	(0.00813)	(0.0106)	(0.0123)	(0.00602)	(0.00311)
Number of observations	72,496	2,742	4,444	5,427	6,360	7,263	6,672	8,143	9,328	10,531	11,586
R-squared	0.022	0.052	0.025	0.019	0.041	0.043	0.022	0.025	0.021	0.045	0.072
Number of firms	9,153	650	847	916	934	936	925	983	974	992	996
Panel B. Gross Capital Formation											
Trend	-0.00363***	-0.00518	-0.00261	-0.00764***	-0.00607***	-0.00547***	-0.00493***	-0.00292***	-0.00211***	-0.00248***	-0.00212***
	(0.000197)	(0.00371)	(0.00220)	(0.00177)	(0.00150)	(0.00108)	(0.000672)	(0.000702)	(0.000545)	(0.000385)	(0.000256)
Constant	0.0989***	0.154***	0.125***	0.142***	0.139***	0.129***	0.112***	0.0745***	0.0696***	0.0718***	0.0679***
	(0.00216)	(0.0213)	(0.0122)	(0.00986)	(0.00760)	(0.00590)	(0.00689)	(0.00994)	(0.00764)	(0.00491)	(0.00299)
Number of observations	73,733	2,836	4,598	5,559	6,473	7,364	6,900	8,328	9,426	10,613	11,636
R-squared	0.069	0.041	0.050	0.097	0.091	0.097	0.080	0.071	0.088	0.096	0.127
Number of firms	9,233	669	864	922	942	938	945	988	975	993	997
Panel C. Gross Savings											
Trend	-0.00106***	0.0140***	-0.000241	-0.000610	-0.00104	-0.00199**	-0.00298***	-0.00139**	-0.00146*	0.000230	0.000490***
	(0.000217)	(0.00497)	(0.00250)	(0.00299)	(0.00121)	(0.000825)	(0.000663)	(0.000556)	(0.000750)	(0.000346)	(0.000159)
Constant	0.0478***	-0.111***	-0.000221	0.0478***	0.0651***	0.0812***	0.0743***	0.0531***	0.0469***	0.0426***	0.0448***
	(0.00238)	(0.0291)	(0.0140)	(0.0168)	(0.00620)	(0.00448)	(0.00667)	(0.00787)	(0.0105)	(0.00440)	(0.00186)
Number of observations	72,496	2,742	4,444	5,427	6,360	7,263	6,672	8,143	9,328	10,531	11,586
R-squared	0.008	0.045	0.021	0.009	0.023	0.033	0.028	0.030	0.006	0.012	0.050
Number of firms	9,153	650	847	916	934	936	925	983	974	992	996
Panel D. Excess Savings											
Trend	0.00300***	0.0166***	0.00175	0.00644*	0.00405**	0.00294**	0.00201**	0.00191**	0.00183*	0.00430***	0.00282***
	(0.000268)	(0.00565)	(0.00294)	(0.00329)	(0.00165)	(0.00122)	(0.000808)	(0.000785)	(0.00106)	(0.000830)	(0.000747)
Dummy Recession	0.0149***	0.0390	0.00955	0.0106	0.0144**	0.00289	0.00318	0.0165***	0.0210**	0.0231**	0.00271
	(0.00178)	(0.0250)	(0.0115)	(0.0131)	(0.00637)	(0.00499)	(0.00514)	(0.00615)	(0.0104)	(0.00996)	(0.00987)
Constant	-0.0575***	-0.261***	-0.122***	-0.0906***	-0.0692***	-0.0453***	-0.0390***	-0.0294***	-0.0417***	-0.0543***	-0.0262**
	(0.00300)	(0.0317)	(0.0160)	(0.0183)	(0.00831)	(0.00647)	(0.00813)	(0.0112)	(0.0155)	(0.0124)	(0.0116)
Number of observations	72,450	2,742	4,444	5,421	6,360	7,255	6,668	8,115	9,328	10,531	11,586
R-squared	0.023	0.054	0.025	0.019	0.042	0.043	0.022	0.026	0.022	0.045	0.072
Number of firms	9,144	650	847	913	934	933	924	981	974	992	996
Panel E. Gross Capital Formation											
Trend	-0.00429***	-0.00448	-0.00133	-0.00708***	-0.00514***	-0.00472***	-0.00501***	-0.00353***	-0.00315***	-0.00377***	-0.00226***
	(0.000202)	(0.00387)	(0.00226)	(0.00179)	(0.00153)	(0.00111)	(0.000672)	(0.000734)	(0.000661)	(0.000676)	(0.000720)
Dummy Recession	-0.0187***	-0.0100	-0.0206**	-0.0147**	-0.0176***	-0.0137***	-0.0123***	-0.0184***	-0.0181***	-0.0188**	-0.00194
	(0.00134)	(0.0159)	(0.00859)	(0.00700)	(0.00585)	(0.00458)	(0.00438)	(0.00576)	(0.00648)	(0.00812)	(0.00952)
Constant	0.108***	0.153***	0.122***	0.141***	0.137***	0.128***	0.113***	0.0838***	0.0862***	0.0922***	0.0701***
	(0.00226)	(0.0214)	(0.0122)	(0.00986)	(0.00762)	(0.00592)	(0.00689)	(0.0105)	(0.00965)	(0.0101)	(0.0111)
Number of observations	73,687	2,836	4,598	5,553	6,473	7,356	6,896	8,300	9,426	10,613	11,636
R-squared	0.072	0.041	0.052	0.098	0.093	0.098	0.081	0.072	0.089	0.097	0.127
Number of firms	9,224	669	864	919	942	935	944	986	975	993	997
Panel F. Gross Savings											
Trend	-0.00120***	0.0119**	0.000559	-0.000347	-0.000959	-0.00141*	-0.00303***	-0.00148**	-0.00131	0.000541	0.000532
	(0.000224)	(0.00522)	(0.00258)	(0.00303)	(0.00124)	(0.000845)	(0.000663)	(0.000582)	(0.000909)	(0.000607)	(0.000447)
Dummy Recession	-0.00388***	0.0306	-0.0129	-0.00711	-0.00149	-0.0104***	-0.00857**	-0.00248	0.00249	0.00455	0.000600
	(0.00148)	(0.0231)	(0.0101)	(0.0120)	(0.00476)	(0.00346)	(0.00422)	(0.00456)	(0.00890)	(0.00728)	(0.00591)
Constant	0.0498***	-0.107***	-0.00153	0.0479***	0.0650***	0.0799***	0.0750***	0.0542***	0.0447***	0.0377***	0.0441***
	(0.00250)	(0.0293)	(0.0140)	(0.0168)	(0.00622)	(0.00449)	(0.00667)	(0.00831)	(0.0133)	(0.00904)	(0.00693)
Number of observations	72,450	2,742	4,444	5,421	6,360	7,255	6,668	8,115	9,328	10,531	11,586
R-squared	0.008	0.046	0.022	0.009	0.023	0.035	0.029	0.029	0.006	0.012	0.050
Number of firms	9,144	650	847	913	934	933	924	981	974	992	996

Table 4 shows the linear trend of the main variables of interest (Excess Savings, Gross Capital Formation, and Gross Savings) in a two-way fixed-effect model with firm-specific and year-specific effects. The results are presented for the whole sample and for every decile of size. Panels A, B, and C show the results of regressions including a constant and a linear trend only. Panels D, E, y F include a dummy variable identifying periods of economic crisis (falling aggregate investment) in the country where the firm is based. Standard deviations are reported between brackets. *, **, ***, show significance at the 10, 5 and 1% respectively.

Table 5
The effect of financial constraints on the trend of Excess Savings
Fixed-effects model by firm

Independent Variables	**Panel A** **Dependent Variable: Excess Savings**				**Panel B** **Dependent Variable: Gross Capital Formation**						
Trend	0.00936***	0.00607***	0.00414***	0.0118***	-0.0137***	-0.00822***	-0.00312***	-0.0120***	-0.00163***	-0.00182***	-0.00223***
	(0.00119)	(0.000670)	(0.000959)	(0.00142)	(0.000751)	(0.000429)	(0.000249)	(0.00212)	(0.000232)	(0.000348)	(0.000271)
Dummy Recession	0.00645***	0.00641***	0.00622***	0.00468***	-0.0109***	-0.0109***	-0.00870***	-0.00676***	-0.0117***	-0.0138***	-0.0116***
	(0.00152)	(0.00152)	(0.00167)	(0.00160)	(0.00120)	(0.00120)	(0.00129)	(0.00127)	(0.00111)	(0.00119)	(0.00115)
L.leverage	-0.0551***	-0.0562***	-0.0964***	-0.0500***	0.0615***	0.0625***	0.0531***	0.0624***	0.0544***	0.0591***	0.0587***
	(0.00979)	(0.00979)	(0.0179)	(0.0100)	(0.00712)	(0.00715)	(0.00769)	(0.00739)	(0.00661)	(0.00711)	(0.00685)
L.clta	-0.0365***	-0.0386***	-0.0382***	-0.0489***	0.136***	0.133***	0.136***	0.135***	0.0961***	0.129***	0.113***
	(0.0115)	(0.0114)	(0.0123)	(0.0118)	(0.00958)	(0.00962)	(0.00998)	(0.00999)	(0.00874)	(0.00955)	(0.00915)
L.liquidity_demand	-0.343***	-0.343***	-0.330***	-0.345***	0.319***	0.319***	0.316***	0.318***	0.308***	0.305***	0.301***
	(0.0128)	(0.0128)	(0.0117)	(0.0129)	(0.00870)	(0.00872)	(0.00889)	(0.0101)	(0.00824)	(0.00865)	(0.00847)
L.assets_nonop	*-0.236***	*-0.230***	*-0.214***	*-0.235***	*0.165***	*0.168***	*0.159***	*0.188***	*0.169***	*0.149***	*0.156***
	(0.0142)	(0.0141)	(0.0126)	(0.0120)	(0.00871)	(0.00871)	(0.00909)	(0.00916)	(0.00838)	(0.00848)	(0.00842)
total_debt_variation	-0.471***	-0.469***	-0.474***	-0.433***	0.392***	0.394***	0.391***	0.369***	0.408***	0.393***	0.397***
	(0.0108)	(0.0108)	(0.0134)	(0.0113)	(0.00932)	(0.00932)	(0.00970)	(0.0104)	(0.00873)	(0.00929)	(0.00900)
current_debt_variation	-0.126***	-0.127***	-0.130***	-0.132***	0.229***	0.228***	0.231***	0.225***	0.201***	0.227***	0.216***
	(0.0119)	(0.0119)	(0.0127)	(0.0123)	(0.0117)	(0.0117)	(0.0121)	(0.0117)	(0.0106)	(0.0117)	(0.0112)
logAT	0.0295***				-0.000320						
	(0.00236)				(0.00178)						
logAT_t	-0.000477***				0.000735***						
	(6.79e-05)				(4.38e-05)						
logAT2		0.000972***				-0.000127**					
		(7.60e-05)				*(5.83e-05)*					
logAT2_t		-1.61e-05***				2.38e-05***					
		(2.08e-06)				(1.37e-06)					
KZ_index			0.0228***				-0.00287***				
			(0.00866)				(0.00111)				
KZ_index_t			-0.000972				0.000324***				
			(0.000685)				(9.82e-05)				
WW_index				-0.373***				0.492***			
				(0.0316)				(0.0440)			
WW_index_t				0.0152***				-0.0160***			
				(0.00214)				(0.00327)			
roa									*0.327***		
									(0.0204)		
roa_t									-0.00214		
									(0.00181)		
pays_div										0.0104***	
										(0.00369)	
pays_div_t										-9.85e-05	
										(0.000338)	
earns_loses											0.0409***
											(0.00267)
earns_loses_t											0.000311
											(0.000251)
Constant	-0.335***	-0.122***	0.0808***	-0.117***	-0.0839***	-0.0592***	-0.0700***	0.200***	-0.0987***	-0.0907***	-0.109***
	(0.0343)	*(0.0175)*	*(0.0116)*	*(0.0205)*	*(0.0263)*	*(0.0140)*	*(0.00606)*	*(0.0287)*	*(0.00545)*	*(0.00648)*	*(0.00578)*
Number of observations	60,589	60,589	56,915	57,769	61,422	61,422	56,920	58,465	61,422	61,422	61,422
R-squared	0.294	0.293	0.387	0.367	0.478	0.478	0.480	0.502	0.535	0.473	0.498
Number of firms	8,393	8,393	8,112	8,212	8,467	8,467	8,112	8,268	8,467	8,467	8,467

Each column of Table 5, reports the regression results corresponding to one meassure of financial constraints. In Panel A the dependent variable is Excess Savings, in Panel B the dependent variable is Gross Capital Formation. Each column reports the coefficient estimates for the trend, our control variables, the measure of financial constraints and the interaction term between this measure and the trend. Our control variables are a dummy variable indicating an aggregate contraction of private investment in the country where the firm is based during year t (Dummy Recession), total and current debt variation between the periods t and t-1, and the lagged values of the ratio of Total Liabilities/Total Assets (leverage), the Current Liabilities/Total Assets ratio (clta), the Cash & Short Term Investment/Total Assets ratio (liquidity_demand), and the Non-Operating Assets/Total Assets ratio (assets_nonop). The measures of financial contraints used are the natural logarithm of Total Assets (logAT), the natural logarithm of Total Assets squared (logAT2), the Kaplan and Zingales index (KZ_index), the Whited and Wu index (WW_index), the Return on Assets ratio (roa), a dummy variable equal to one when the firm pays cash dividends, and a dummy variable equal to one when the firm reports positive net income. Standard deviation robust to clustering by firm are reported between brackets. *, **, ***, indicate significance at the 10, 5 y 1% level respectively.

Table 6
The effects of volatility on Excess Savings
Fixed-effects model by firm

Independent Variables	Panel A Dependent Variable: Excess Savings					Panel B Dependent Variable: Gross Capital Formation				
Trend	0.000939***	0.00181***	0.00155***	0.00181***	0.000769***	-0.000737***	-0.00191***	-0.00145***	-0.00185***	-0.000224
	(0.000284)	(0.000225)	(0.000228)	(0.000225)	(0.000280)	(0.000228)	(0.000175)	(0.000183)	(0.000176)	(0.000216)
Dummy Recession	0.00774***	0.00911***	0.00840***	0.00868***	0.00743***	-0.0124***	-0.0139***	-0.0115***	-0.0134***	-0.0122***
	(0.00152)	(0.00155)	(0.00161)	(0.00153)	(0.00156)	(0.00120)	(0.00121)	(0.00122)	(0.00120)	(0.00124)
logAT	0.0254***	0.0263***	0.0265***	0.0276***	0.0247***	0.00382**	0.000886	-4.21e-05	0.00102	0.00286
	(0.00243)	(0.00235)	(0.00240)	(0.00237)	(0.00242)	(0.00185)	(0.00181)	(0.00187)	(0.00181)	(0.00177)
L.leverage	-0.0516***	-0.0517***	-0.0418***	-0.0525***	-0.0521***	0.0519***	0.0480***	0.0432***	0.0504***	0.0440***
	(0.00973)	(0.00978)	(0.00981)	(0.00964)	(0.0102)	(0.00712)	(0.00710)	(0.00700)	(0.00712)	(0.00742)
L.clta	-0.0302***	-0.0291**	-0.0376***	-0.0268**	-0.0270**	0.127***	0.123***	0.132***	0.126***	0.124***
	(0.0114)	(0.0115)	(0.0114)	(0.0115)	(0.0117)	(0.00964)	(0.00964)	(0.00966)	(0.00963)	(0.00973)
L.liquidity_demand	*-0.327***	*-0.321***	*-0.335***	*-0.327***	*-0.316***	*0.296***	*0.287***	*0.296***	*0.295***	*0.287***
	(0.0129)	(0.0133)	(0.0131)	(0.0131)	(0.0135)	(0.00868)	(0.00878)	(0.00883)	(0.00877)	(0.00879)
L.assets_nonop	-0.221***	-0.210***	-0.236***	-0.217***	-0.214***	0.146***	0.135***	0.143***	0.141***	0.145***
	(0.0138)	(0.0141)	(0.0124)	(0.0141)	(0.0143)	(0.00859)	(0.00873)	(0.00870)	(0.00871)	(0.00889)
total_debt_variation	-0.472***	-0.474***	-0.472***	-0.474***	-0.472***	0.394***	0.394***	0.395***	0.396***	0.393***
	(0.0109)	(0.0111)	(0.0112)	(0.0109)	(0.0112)	(0.00950)	(0.00966)	(0.00973)	(0.00959)	(0.00990)
current_debt_variation	-0.121***	-0.120***	-0.124***	-0.121***	-0.123***	0.224***	0.225***	0.229***	0.224***	0.224***
	(0.0121)	(0.0123)	(0.0125)	(0.0122)	(0.0125)	(0.0119)	(0.0121)	(0.0122)	(0.0120)	(0.0123)
movcv_net_sales	-0.0761***					0.0967***				
	(0.0186)					(0.0138)				
movcv_net_sales_t	0.00629***					-0.00845***				
	(0.00179)					*(0.00134)*				
movcv_sales_growth		-6.00e-06***					2.19e-06			
		(1.92e-06)					(2.24e-06)			
movcv_sales_growth_t		3.76e-07**					-8.60e-08			
		(1.63e-07)					(1.80e-07)			
movcv_cogs_sales			-0.0678***					0.00625		
			(0.0222)					(0.0117)		
movcv_cogs_sales_t			0.00496**					-0.000953		
			(0.00227)					(0.00134)		
movcv_nibl_sales				-5.01e-06*					-1.75e-06	
				(3.01e-06)					(1.74e-06)	
movcv_nibl_sales_t				*2.98e-07*					*1.19e-07*	
				(2.03e-07)					(1.23e-07)	
movcv_tobin_q					-0.0828***					0.113***
					(0.0160)					(0.0104)
movcv_tobin_q_t					0.00643***					-0.0113***
					(0.00158)					(0.00108)
Constant	-0.272***	-0.301***	-0.298***	-0.318***	-0.266***	-0.148***	-0.0825***	-0.0783***	-0.0897***	-0.129***
	(0.0365)	(0.0346)	(0.0358)	(0.0347)	(0.0362)	(0.0281)	(0.0270)	(0.0280)	(0.0269)	(0.0271)
Number of observations	57,959	56,244	55,719	57,725	55,057	58,687	56,920	56,393	58,443	55,611
R-squared	0.290	0.288	0.295	0.290	0.289	0.476	0.476	0.483	0.475	0.481
Number of firms	7,572	7,108	7,129	7,494	6,991	7,629	7,162	7,183	7,550	7,032

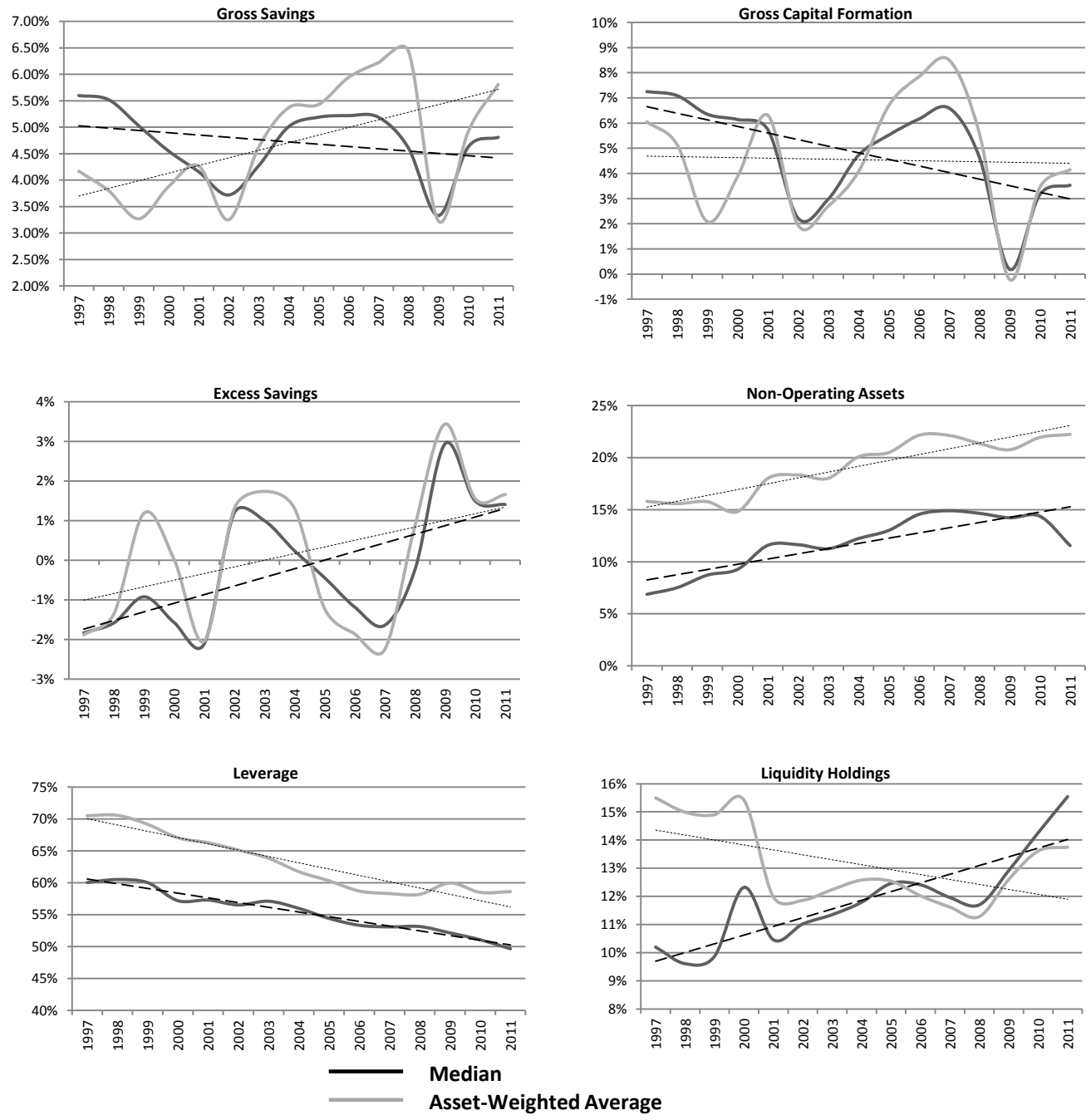
Each column of Table 6, reports the regression results corresponding to one measure of volatility. In Panel A the dependent variable is Excess Savings, in Panel B the dependent variable is Gross Capital Formation. Each column reports the coefficient estimates for the trend, our control variables, the measure of volatility and the interaction term between this measure and the trend. Our control variables are a dummy variable indicating an aggregate contraction of private investment in the country where the firm is based during year t (Dummy Recession), total and current debt variation between the periods t and t-1, and the lagged values of the ratio of Total Liabilities/Total Assets (leverage), the Current Liabilities/Total Assets ratio (clta), the Cash & Short Term Investment/Total Assets ratio (liquidity_demand), and the Non-Operating Assets/Total Assets ratio (assets_nonop). The measures of volatility used are the moving coefficients of variation of Net Sales (movcv_net_sales), sales growth (movcv_sales_growth), the Cost of Goods Sold/Net Sales ratio (movcv_cogs_sales), the Net Income/Net Sales ratio (movcv_nibl_sales), and the Tobin Q (movcv_tobin_q). Standard deviation robust to clustering by firm are reported between brackets. *, **, ***, indicate significance at the 10, 5 y 1% level respectively.

Table 7
The effects of growth on Excess Savings
Fixed-effects model by firm

Independent Variables	**Panel A Dependent Variable: Excess Savings**			**Panel B Dependent Variable: Gross Capital Formation**		
Trend	0.00152***	0.000917**	0.00227***	-0.00185***	-0.00156***	-0.000943***
	(0.000221)	(0.000395)	(0.000383)	(0.000173)	(0.000315)	(0.000274)
Dummy Recession	0.00870***	0.00814***	0.0113***	-0.0107***	-0.0134***	-0.0117***
	(0.00152)	(0.00155)	(0.00245)	(0.00116)	(0.00121)	(0.00182)
logAT	0.0249***	0.0277***	0.0355***	0.00362**	0.00394**	-0.00304
	(0.00242)	(0.00235)	(0.00456)	(0.00175)	(0.00179)	(0.00270)
L.leverage	-0.0509***	-0.0563***	-0.0436***	0.0478***	0.0552***	0.0543***
	(0.00980)	(0.0101)	(0.0139)	(0.00668)	(0.00731)	(0.00991)
L.clta	-0.0349***	-0.0288**	-0.0501***	0.117***	0.125***	0.163***
	(0.0115)	(0.0118)	(0.0165)	(0.00901)	(0.00961)	(0.0140)
L.liquidity_demand	*-0.334***	*-0.331***	*-0.382***	*0.291***	*0.303***	*0.331***
	(0.0127)	(0.0129)	(0.0205)	(0.00833)	(0.00861)	(0.0121)
L.assets_nonop	-0.224***	-0.225***	-0.331***	0.141***	0.150***	0.198***
	(0.0137)	(0.0141)	(0.0186)	(0.00822)	(0.00877)	(0.0121)
total_debt_variation	-0.471***	-0.475***	-0.446***	0.358***	0.393***	0.361***
	(0.0109)	(0.0109)	(0.0159)	(0.00901)	(0.00952)	(0.0129)
current_debt_variation	-0.128***	-0.122***	-0.157***	0.207***	0.224***	0.264***
	(0.0120)	(0.0122)	(0.0174)	(0.0111)	(0.0119)	(0.0165)
sales_growth	-0.0376***			0.103***		
	(0.00913)			(0.00825)		
sales_growth_t	0.00454***			-0.00284***		
	(0.000860)			*(0.000735)*		
tobin_q		-0.00568**			0.00644***	
		(0.00247)			(0.00229)	
tobin_q_t		0.000737**			-0.000285	
		(0.000305)			(0.000223)	
rd			-0.750***			-0.00264
			(0.183)			(0.0706)
rd_t			0.0257**			-0.0138**
			(0.0105)			(0.00544)
Constant	-0.269***	-0.306***	-0.433***	-0.129***	-0.146***	-0.0624
	(0.0354)	(0.0348)	(0.0732)	(0.0260)	(0.0275)	(0.0439)
Number of observations	60,589	59,676	30,729	61,422	60,419	30,992
R-squared	0.294	0.293	0.365	0.499	0.476	0.486
Number of firms	8,393	8,283	4,422	8,467	8,352	4,439

Each column of Table 7, reports the regression results corresponding to one measure of growth. In Panel A the dependent variable is Excess Savings, in Panel B the dependent variable is Gross Capital Formation. Each column reports the coefficient estimates for the trend, our control variables, the measure of growth and the interaction term between this measure and the trend. Our control variables are a dummy variable indicating an aggregate contraction of private investment in the country where the firm is based during year t (Dummy Recession), total and current debt variation between the periods t and t-1, and the lagged values of the ratio of Total Liabilities/Total Assets (leverage), the Current Liabilities/Total Assets ratio (clta), the Cash & Short Term Investment/Total Assets ratio (liquidity_demand), and the Non-Operating Assets/Total Assets ratio (assets_nonop). The measures of growth used are the first

Figure 1
The main variables during 1997-2010 for the whole sample



Excess Savings, Gross Savings, Gross Capital Formation, Non-Operating Assets, Leverage, and Liquidity Holdings, during the period 1997-2010, according to median and asset-weighted average, for the sample of manufacturing firms from France, Germany, Italy, Japan and United Kingdom.

Figure 2

Excess Savings

Financially constrained vs. Financially unconstrained firms

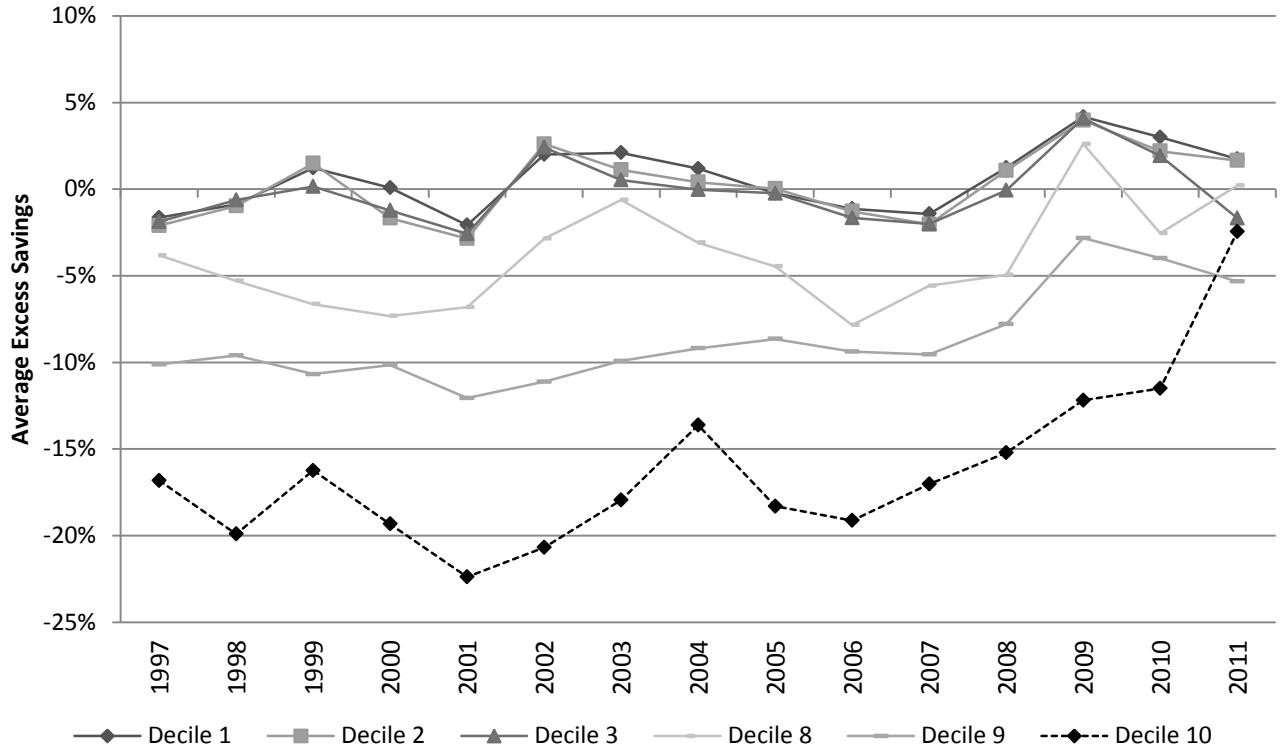


Figure 2 shows the evolution of Excess Savings for firms facing more financial constraints (decile 8, 9, and 10) and those facing less financial constraints (decile 1, 2, and 3). Firms were separated into deciles according to the value of the Whited-Wu Index, and then the average Excess Savings was computed for each year by decile.

Figure 3

Excess Savings

Volatile vs. Non-volatile firms

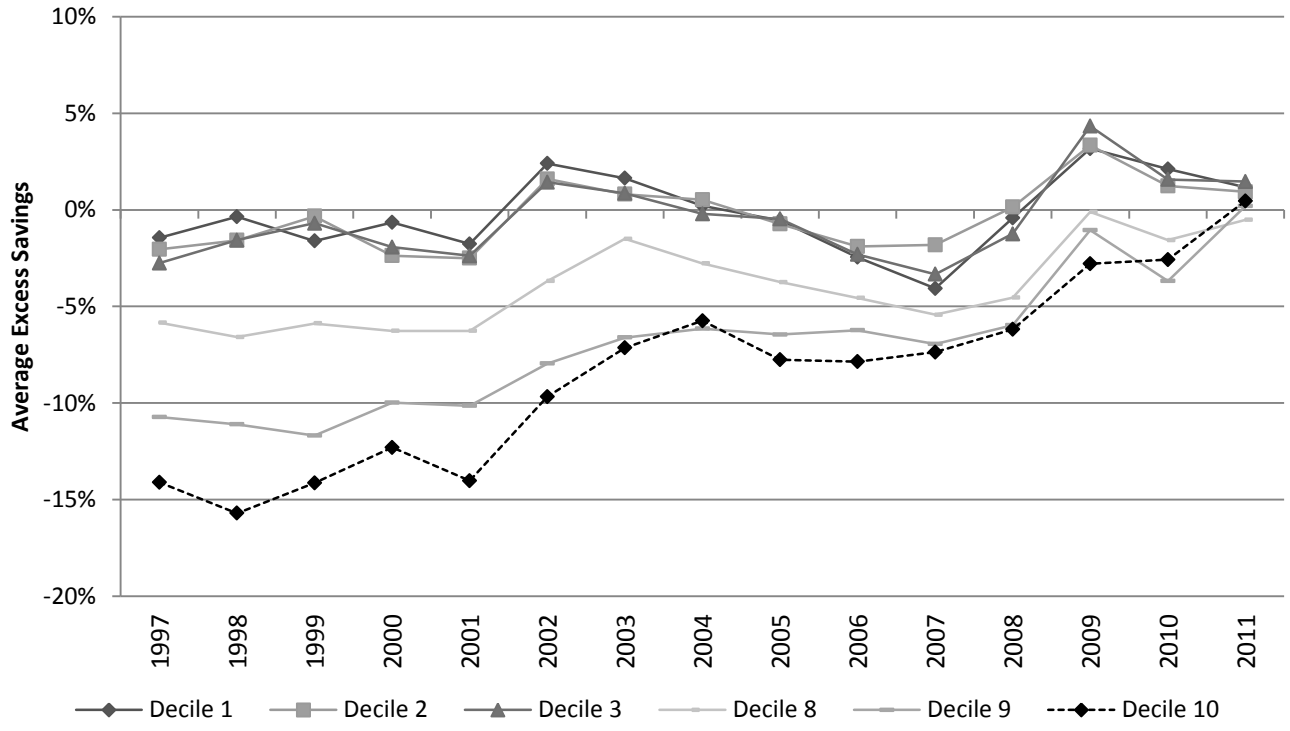


Figure 3 shows the evolution of Excess Savings for firms facing a more volatile environment (decile 8, 9, and 10) and those facing a less volatile environment (decile 1, 2, and 3). Firms were separated into deciles according to the value of the variation coefficient of Tobin's Q, and then the average Excess Savings was computed for each year by decile.

Figure 4
Sales growth rate, Excess Savings, and Gross Capital Formation
High-growth vs Low-growth firms

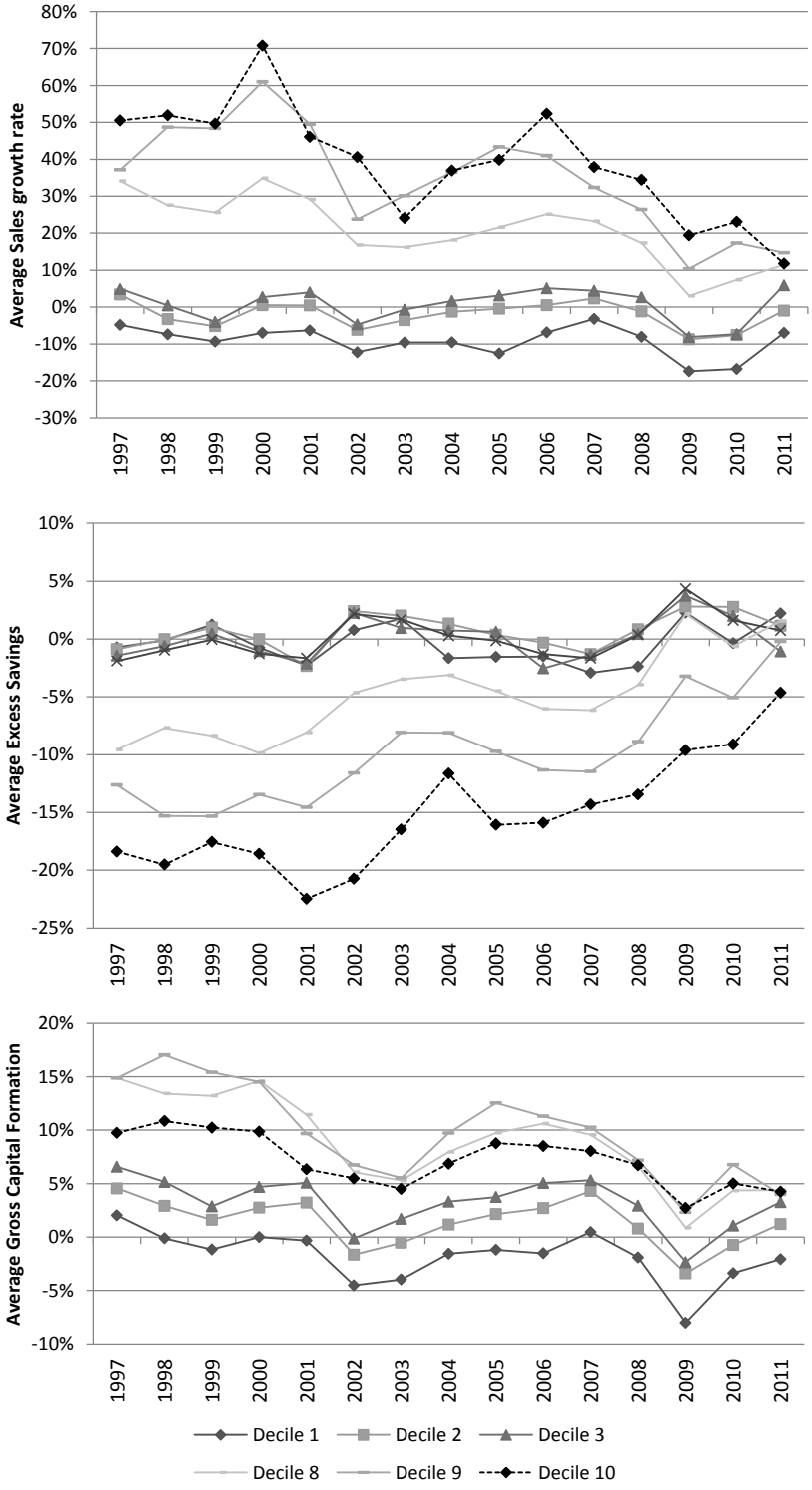
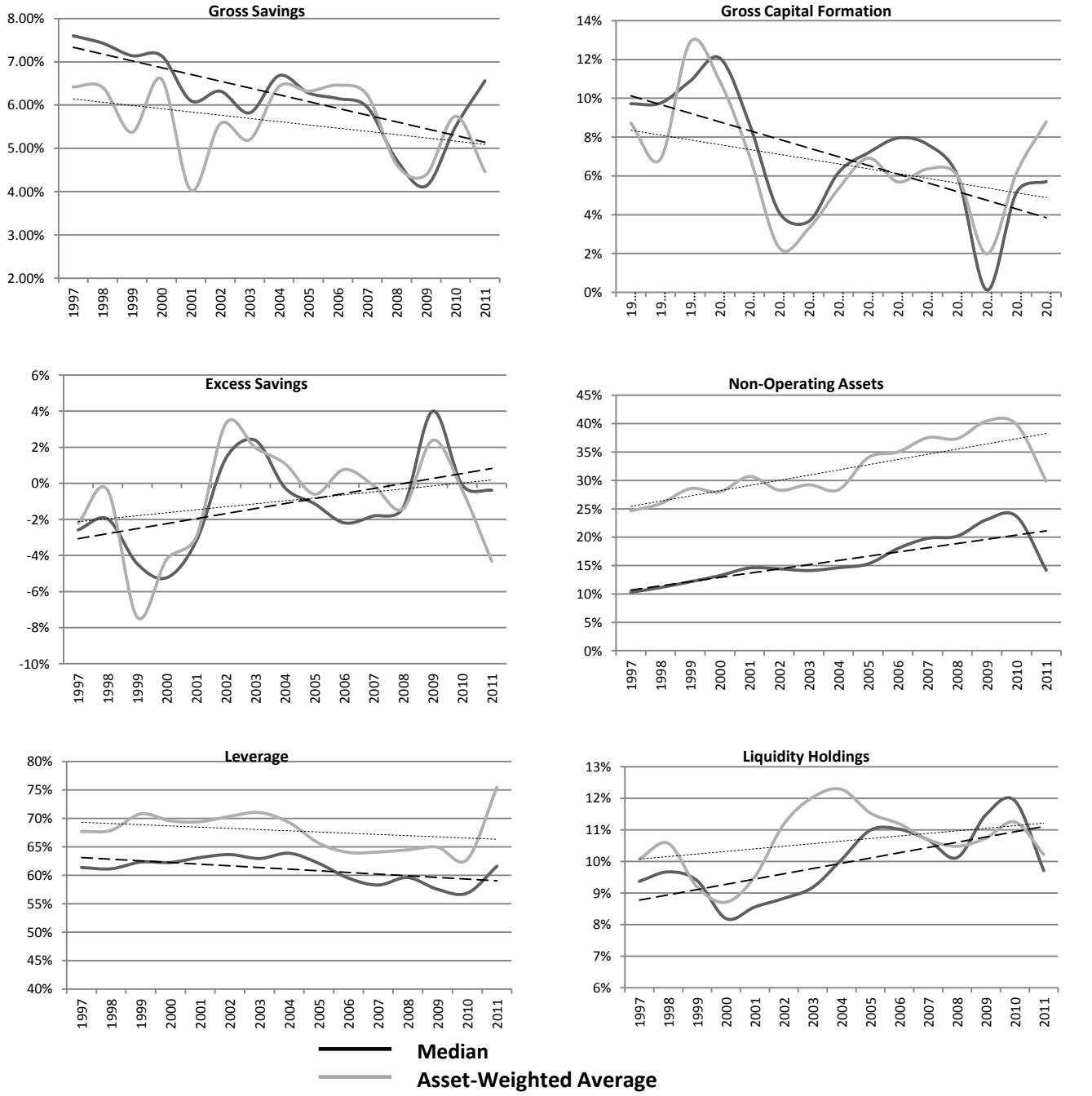


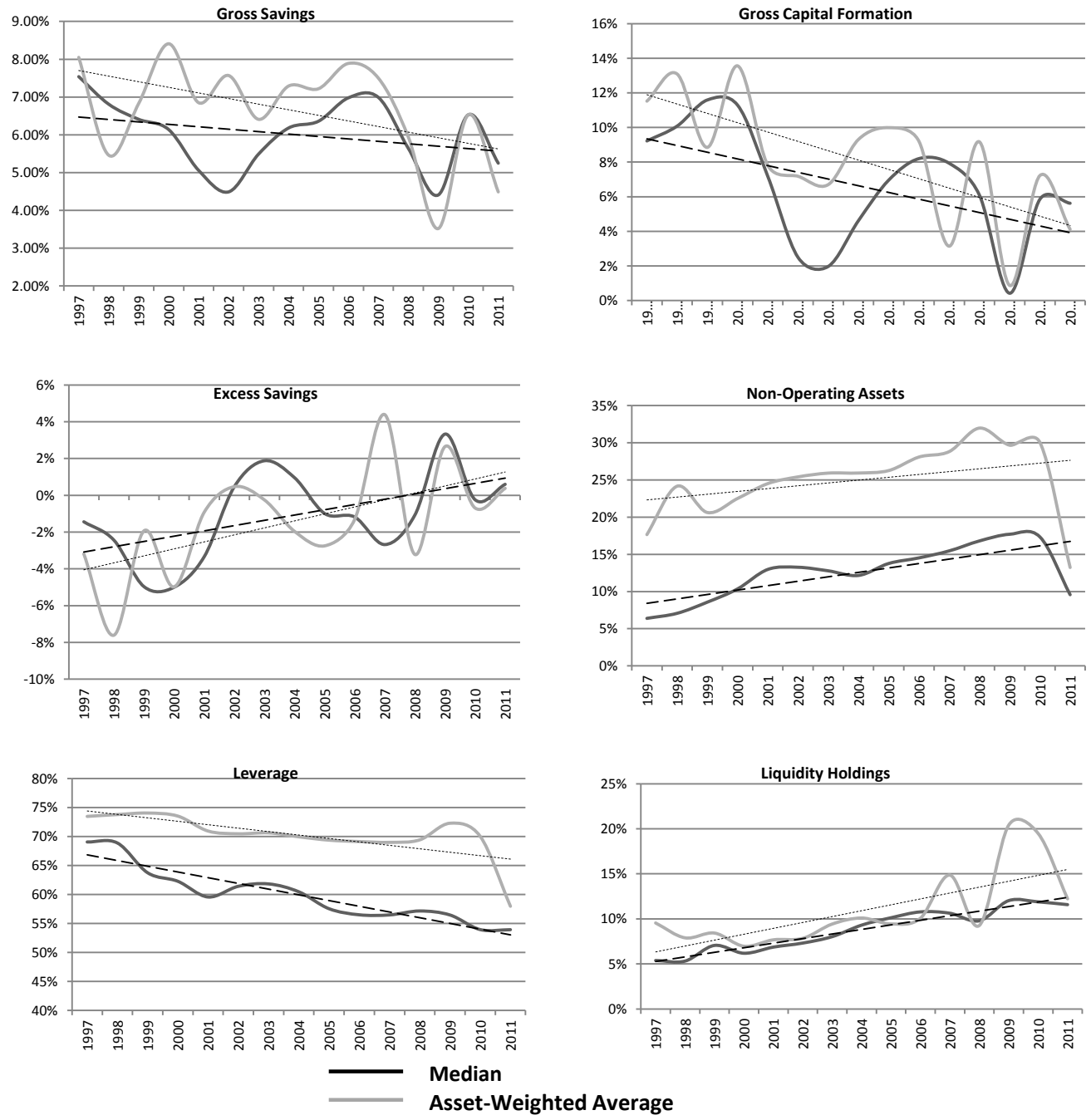
Figure 4 shows the evolution of Sales Growth, Excess Savings, and Gross Capital Formation, for high-growth firms (decile 8, 9, and 10) and low-growth firms (decile 1, 2, and 3). Firms were separated into deciles according to its mean sales growth rate during the sample period, and then the average Sales Growth rate, Excess Savings, and Gross Capital Formation were computed for each year by decile.

Appendix Figure 1A - France
The main variables during 1997-2010 for firms from France



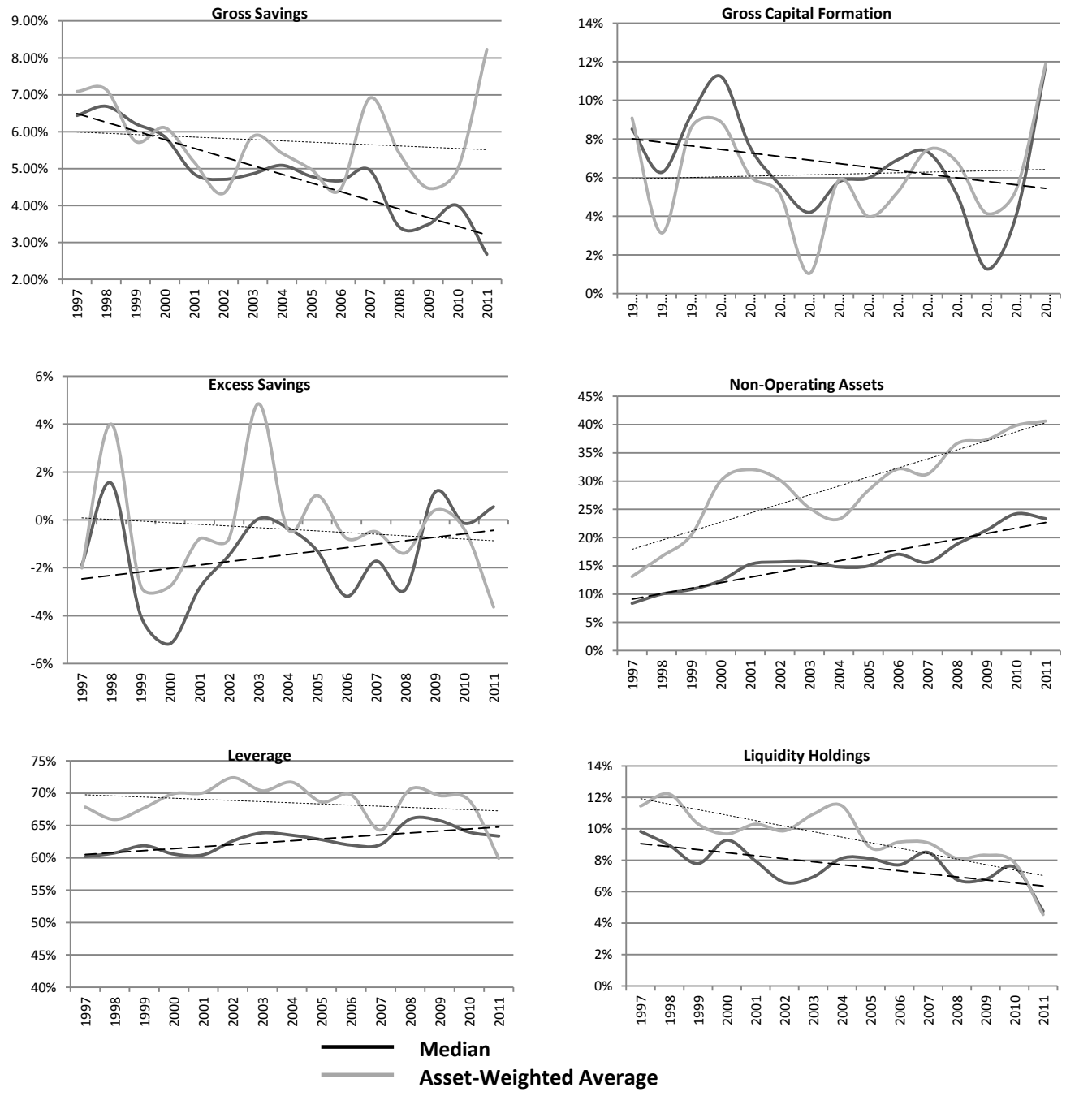
Excess Savings, Gross Savings, Gross Capital Formation, Non-Operating Assets, Leverage, and Liquidity Holdings, during the period 1997-2010, according to median and asset-weighted average, for the sample of manufacturing firms from France.

Appendix Figure 1B - Germany
The main variables during 1997-2010 for firms from Germany



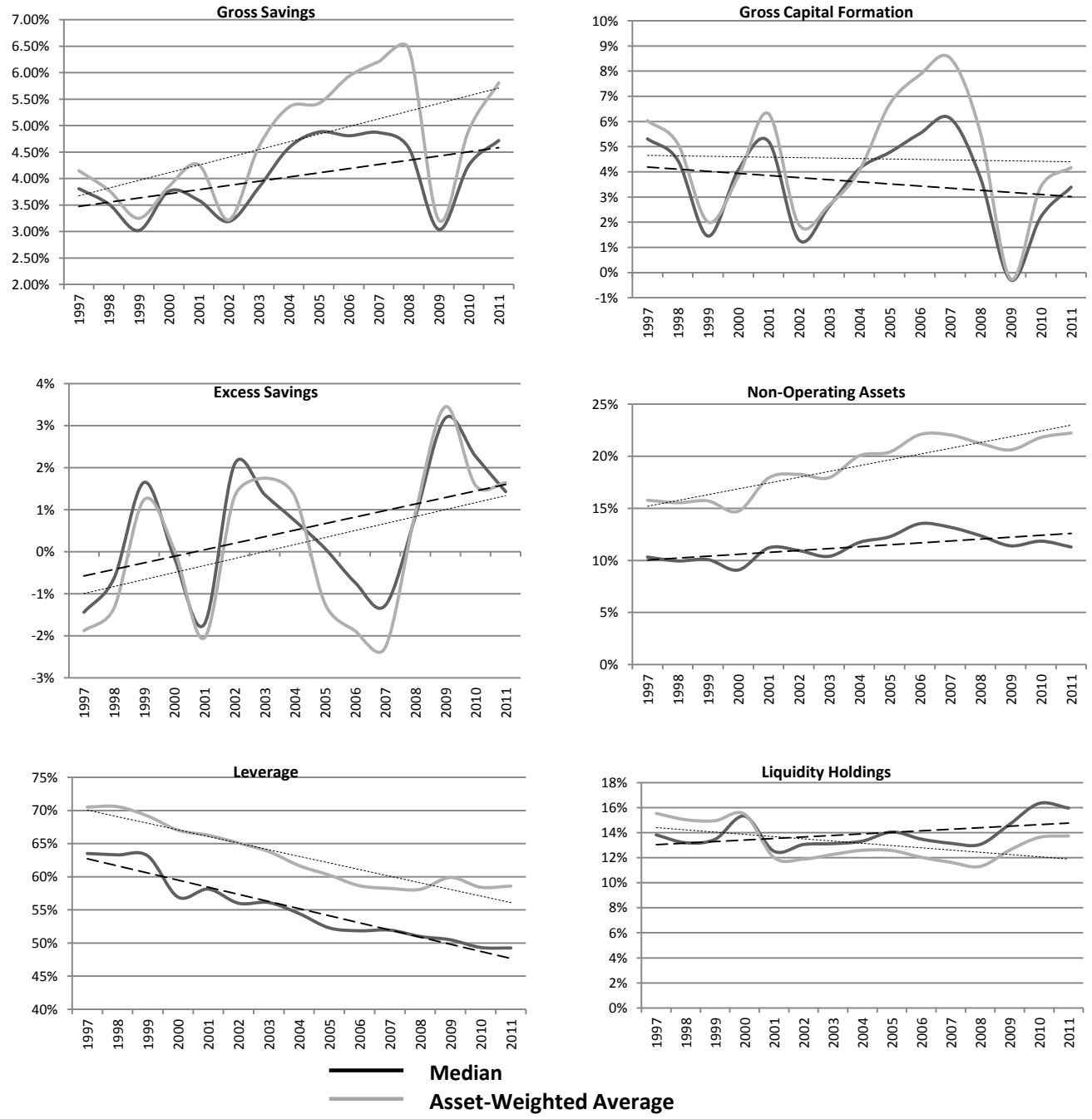
Excess Savings, Gross Savings, Gross Capital Formation, Non-Operating Assets, Leverage, and Liquidity Holdings, during the period 1997-2010, according to median and asset-weighted average, for the sample of manufacturing firms from Germany.

Appendix Figure 1C - Italy
The main variables during 1997-2010 for firms from Italy



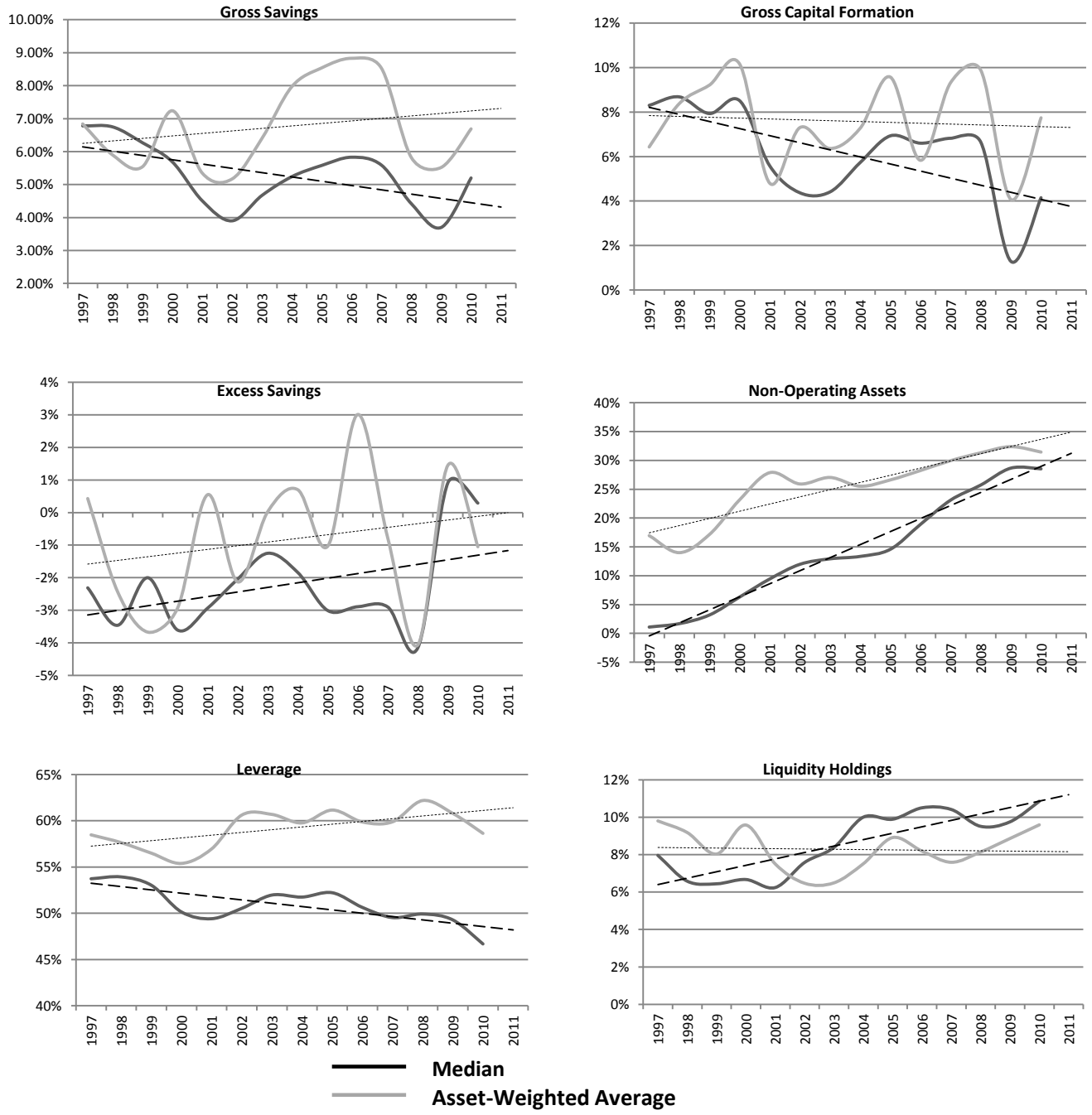
Excess Savings, Gross Savings, Gross Capital Formation, Non-Operating Assets, Leverage, and Liquidity Holdings, during the period 1997-2010, according to median and asset-weighted average, for the sample of manufacturing firms from Italy.

Appendix Figure 1D - Japan
The main variables during 1997-2010 for firms from Japan



Excess Savings, Gross Savings, Gross Capital Formation, Non-Operating Assets, Leverage, and Liquidity Holdings, during the period 1997-2010, according to median and asset-weighted average, for the sample of manufacturing firms from Japan.

Appendix Figure 1E - United Kingdom
The main variables during 1997-2010 for firms from United Kingdom



Excess Savings, Gross Savings, Gross Capital Formation, Non-Operating Assets, Leverage, and Liquidity Holdings, during the period 1997-2010, according to median and asset-weighted average, for the sample of manufacturing firms from United Kingdom.