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Do corporate financial patterns in European countries  
converge and testify for disintermediation ?\*

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## **Abstract**

This paper provides a quantitative comparison of the financial patterns of non-financial European firms for seven Continental European countries and the period 1991-2001. Our analytical framework departs from the common one as we consider that long-term and short-term sources of funds have to be analysed separately. Using the BACH database, principal component analysis, cluster analysis and econometrical tests are carried out in order to test for two hypotheses : i) there is a tendency toward grouping around a common corporate financial pattern; ii) there is a general tendency across countries toward less bank financing. We find that differences between European countries remain highly significant so that the first hypothesis is not validated. The second hypothesis is rejected with the long-term intermediation ratio but validated with the short-term one. Indeed, econometrical tests lead to a strong conclusion : the existence of a common trend toward disintermediation of short-term financing. The banking function of allocating liquidity for day-to-day business and providing a certain liquidity insurance to firms is declining whatever the size of firms.

**JEL classification codes : G 20, G 21**

**Keywords : corporate financial structure, BACH database, European convergence, financial intermediation, liquidity insurance.**

## **1. Introduction**

For the past twenty years, cross-country studies of the patterns of corporate financing have been dominated by the idea that differences can be explained by two ideal-types of financial systems : securities markets-based systems, such as in Great Britain and the United States, bank-based systems, such as in Germany. This standard distinction is becoming widely controversial (Carlin and Mayer, 2000), as empirical works suggest a reality more complex than the model. The conventional view being no more the panacea, new analytical frameworks are needed in order to study corporate financing in developed countries. We propose an original framework : corporate sources of funds are distinguished according to their nature (equity versus debt) and to their maturity (long-term versus short-term debt). Hence, our taxonomy is more complex than the conventional binary one. We put forward this framework because we consider that diversity among financial corporate patterns is larger than expected by the mainstream literature. However, we assume that only a limited number of sustainable models can coexist. This view challenges the idea of a single and optimal model – the market-based – which should dominate others. It also puts into question the idea that financial systems are converging towards a single pattern, brought by globalisation.

Using the BACH database, empirical tests are carried out. Our database includes seven continental European countries and covers the period 1991-2001. We are aware that empirical findings are highly sensitive to empirical choices. As there are several sources of external funds, ranging from issued equities to trade credit, corporate financial patterns cannot be easily identified in a cross-country comparison. Empirical findings are also highly sensitive to the kind of data (flow of funds or balance sheet, aggregate or individual data) and to the rate of coverage of the sample, firms having distinct financial patterns according to the size. It

explains why empirical studies in that field cannot be easily compared and why quantitative studies remain rather inconclusive (see table A. 1 in appendix).

This paper is structured as follows. The theoretical and empirical analytical frameworks are displayed in section 2. In section 3-5, we address three sets of questions: What can we learn from corporate financial patterns ? Do we find cross-country significant differences in the source of corporate funds? (section 3) Is there any pattern which supports higher performances ? Is there any model to be followed by European firms ? (section 4). Does empirical evidence testify in favour of the assumption that national financial systems are converging? Is there a general tendency towards less bank financing ? (section 5) Conclusions are drawn in section 6.

## **2. The theoretical and empirical analytical frameworks**

### 2.1 The theoretical analytical framework

Few studies discriminate sources of funds according to the term (Demirgüç-Kunt et Maksimovic,1999). Why do we consider that it is important to deal with firm debt maturity ? In our view, firms have to cope with distinct problems which have not the same temporal horizon. Corporate managers have to decide and implement long-term planned investments which are risky and to react to day-to-day events which can be unexpected and, hence, uncertain. It is assumed that financial patterns are better analysed when two capacities are taken into account: the ability to finance risky investment projects and the fitness to be flexible, i.e. to react to contingent events that can be good or bad for the future of the firm (table 1). Financing problems can be raised by long-term planned expenses as well as by unexpected financial consequences of bad or good events. Indeed, a recession and a dramatic

growth of the turnover are both the causes of liquidity problem. From this viewpoint, a given corporate financing pattern is seen as a specific way of dealing with risk and uncertainty. Therefore, the effect that the capital structure may have on corporate dynamism must take into account not only the long-term pattern of financing but also the short-term one.

Two dimensions matter: to fund long-term investment, corporate funding can rely either on equity or on long-term debt, to be flexible, financing comes either from stable resources or from short-term debt. Stable resources, also called permanent funds, are a part of total resources and have several sources: i) equity, ii) long-term<sup>1</sup> financial debt, that comes either from financial institutions, mostly banks, or markets, and iii) provisions. Stable resources are required to finance investment and are sometimes used for funding current expenses; in the extreme case of non-profitable enterprises backed by venture capital, wage expenses are covered by permanent funds. Firms may hold substantial cash reserves to face a liquidity shortage and have the internal capacity to react to unexpected events resulting in a need for additional capital. Short-term debt granted by banks to firms is the main external resource. It can be made available quickly and at a reasonable cost if there is an explicit or sometimes implicit agreement with bankers.

Theoretically, banks and markets perform two distinct functions: they provide stable resources to finance risky and planned investment and a certain liquidity insurance that helps firms to face current business events, this liquidity promise depends on private information (bank) and on public information (market) about firms. However, in European countries, markets only perform the first function, as only a few non-financial firms issue short-term securities on financial markets.

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<sup>1</sup> In this paper, the term ‘long-term debt’ is employed instead of ‘medium- and long-term debt’.

**Table 1: The analytical framework**

Uses of funds	Sources of funds	Sources of funds using the BACH database	Selected ratios (ratio label)
<p><b><i>Fixed capital</i></b>                      Long-term investment is risky</p>	<ul style="list-style-type: none"> <li>□ Internal (retained earnings)</li> <li>□ External                             <ul style="list-style-type: none"> <li>• issued equity</li> <li>• long-term debt                                     <ul style="list-style-type: none"> <li>▪ market debt</li> <li>▪ bank debt</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>} Equity</li> <li>} Long-term debt</li> </ul>	<p>Equity ratio (<i>equity</i>)</p> <p>Long-term debt ratio (<i>leverage</i>)</p>
<p><b><i>Working capital</i></b>                      Uncertainty is small (high) when the level of current assets is regular (irregular)</p>	<ul style="list-style-type: none"> <li>□ Stable resources                             <ul style="list-style-type: none"> <li>▪ equity</li> <li>▪ long-term debt</li> </ul> </li> <li>□ Short-term debt                             <ul style="list-style-type: none"> <li>▪ market debt</li> <li>▪ bank debt</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>} Stable resources</li> <li>} Short-term debt</li> </ul>	<p>Stable resources ratio (<i>autonomy</i>)</p> <p>Short-term financial debt ratio (<i>overdraft</i>)</p>

Using financial statements, we try to observe how firms are able to secure long-term financial needs and short-term ones. As we consider that the distinction between equity and debt is, of course, relevant and that long-term and short-term sources of funds have to be analysed separately, two pairs of key criteria are selected : the long-term debt ratio *versus* equity ratio and the short-term financial debt ratio *versus* the stable resources ratio. If the long-term financing patterns and the short-term ones are independent, then four corporate financial patterns can be distinguished (table 2). In countries where long- and short-term debt are major sources of financing, the national financial pattern can be depicted as *debt-oriented* whereas in countries where firms rely on equity and are able to secure a high degree of stable resources for current activity, the national financial pattern is depicted as *autonomy- and equity-oriented*. This typology includes two other cases: in countries where firms on the average have a rather low long-term debt ratio but a high rate of net short-term financial debt, the financial pattern is *overdraft-oriented*; in countries where firms rely on a high long-term debt ratio and obtain a high degree of stable resources for funding current activity, that correlates with a low short-term bank debt, the financial pattern is *autonomy-oriented*. Autonomy-oriented firms have a higher internal capacity than their counterparts to finance current activity and to be flexible.

**Table 2: Four corporate financial patterns**

		Short-term financial debt ratio	
		+	-
Long-term debt ratio	+	<i>Debt-oriented</i>	<i>Autonomy-oriented</i>
	-	<i>Overdraft-oriented</i>	<i>Autonomy- and equity-oriented</i>

## 2.2 The selected database

The selected database strongly influences empirical findings. The difficulty of testing theories of corporate financing by using national aggregate data has been discussed before (Corbett and Jenkinson, 1996). Datasets developed on the basis of corporate financial statements are more appropriate as they can be broken down by firms size. SMEs matter because they are often more typical as their scope of sources of funds is more limited. If one only looks at the country effect and ignores the size effect, then average values are determined by the largest firms; this bias is amplified by using databases including only firms which have gone public or only national accounts flow of funds data. In cross-country studies the degree of comparability of national databases also matters. Being limited to the available databases forces some compromises : financial statements data are issued from the BACH database, which is, by far, the most harmonized database with a rather good coverage rate, even if imperfections remain<sup>2</sup>. However, it is a dataset of semi-aggregate data made up of averages by country, year, sector and size, which does not provide firm level balance sheets.

The Bank for the Accounts of Companies Harmonised (BACH) is the result of a close cooperation between both the European Commission and the European Committee of Central Balance-sheet, which is responsible for the aggregation of financial data of non-financial firms. For members of the European Union this information has been harmonised (see appendix 2). Other studies of the financial structure of European firms also use this database (Rivaud-Danset *et al.*, 2001, Gallizo and Salvador, 2002, Paulet, 2003, and Cobham, 2004). The BACH database contains information by year, country, size and sector. Data contained in the database for the manufacturing sector have a higher quality than data for other sectors, and our investigation focuses on this industrial sector. This study covers the 1991-2001 period. In order to control for comparability, it is based on seven European countries only. Austria,

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<sup>2</sup> The coverage of the sample firms of the BACH database is assessed by Cobham (2004).

Belgium, France, Germany, Italy, Spain and Sweden are the seven countries for which complete or nearly complete data are available for all the sectors<sup>3</sup>.

### 2.3 The data analysis method

To address the question of convergence, two suitable statistical methods are performed: the Principal Component Analysis (PCA) and the Cluster Analysis (CA)<sup>4</sup>.

Principal component analysis is helpful when several criteria are used to discriminate between data and when the sample is large. The data analysis covers an eleven year period, data being broken down by size (three sizes) and sectors: three sub-sectors when only the manufacturing industries are selected (651 observations), eleven sectors and sub-sectors when all the sectors are taken into account (2387 observations). PCA provides global images of the main dataset features. To each individual data or 'observation' ( $i$ ) is associated a set of ( $K$ ) numeric variables which can be displayed by a scatter of points,  $N_i$ , in a space  $R^K$  with  $K$  dimensions. PCA looks for the best orientations of  $R^K$  and reduces the number of selected variables – called 'active variables' – to a few independent and hence orthogonal components, also called factorial axes. The best factorial axis has the highest capacity for explaining the diversity between basic data, measured by the variance. Two factorial axes shape a figure on which  $N_i$  can be plotted. Hence, projections on this two-dimensional space allow us to visualize the grouping of observations, making the results more explicit. Each data has a code, for instance 91 SW 1 21 means Swedish (SW) small firms (1), producing intermediary manufacturing goods (21) in 1991. The most representative (atypical) firms of the sample are located near (far from) the intersection of the factorial axes. Visualizing the pair of factorial

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3 The small Austrian firms are not in the sample, due to missing data in BACH. Data are not available for German firms after 2000.

4 For more details about these methods, see Volle (1997).

axes is however only a limited step of the analysis, while looking at the statistical evidence is by far the most important step.

Cluster analysis is also important and is often used as a companion of PCA. It sorts the output dataset according to each of the large components and permits the grouping of data that are most similar (a standard iterated algorithm is used to minimize the sum of squared distances from the cluster means). Cluster analysis makes sure that scatters of points that are grouped are close to each other in the space  $R^K$  and not only in a two-components space.

Table 3 gives the list of selected variables that enter into the data analysis, and their definition according to the BACH conventions (these are ratios of means since the BACH database only contains aggregate data). It is assumed in this paper that the same level of economic profitability can be achieved following different financial patterns. In order to test this assumption, the ratios which characterize the sources of funds are distinguished from the ratios used to identify economic and financial performances: the set of balance-sheet ratios are treated by the PCA as active variables and the set of performance ratios are treated as supplementary variables<sup>5</sup>. Active variables have been selected in order to contrast :

- firms with a higher level of equity and those with a higher level of long-term financial indebtedness,
- firms with a higher rate of stable resources and those with a higher rate of short-term financial debt.

This set of ratios has been used in a previous study to compare the financial structures of SMEs and large firms within the EU (Rivaud-Danset *et al.*, 2001). It is partly distinct from the set of ratios selected as indicators of the evolution of corporate financial patterns by

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<sup>5</sup> Supplementary variables contribute neither to the definition of factorial axes nor to the grouping of data.

other studies using the BACH database (*European Economy*, supplement A, various issues; Gallizo and Salvador, 2002 <sup>6</sup>).

**Table 3 : Selected variables of the data analysis**

<p><u>Active variables</u></p> <p>‘Equity’ = Capital and reserves / Total balance-sheet</p> <p>‘Leverage’ = Provisions and medium- and long-term liabilities / (Capital and reserves + provisions and medium and long-term liabilities)</p> <p>‘ReserveRate’ = Reserves / Capital and reserves</p> <p>‘Fidebtstruct’ = Financial debt / Medium- and long-term liabilities</p> <p>‘Overdraft’ = [Short-term financial debt - (current investment + cash at bank and in hand)] / Total liabilities</p> <p>‘Autonomy’ = [(Capital and reserves + provisions and medium- and long-term liabilities) – (fixed assets + working capital requirement)] / Turnover</p> <p>‘Nonfidebrate’ = [Trade credits + payments received on accounts of orders] / Short-term liabilities</p> <p><u>Supplementary variables</u></p> <p>‘CashFlowCap’ = Cash flow / Turnover</p> <p>‘ROE’ = Return on equity = Cash flow / Capital and reserves</p> <p>‘GrosProfita’ = Gross operating profit / (Fixed assets + working capital requirement)</p> <p>‘Markup’ = Gross operating profit / Turnover</p> <p>‘Fixasset’ = Fixed assets / Turnover</p> <p>‘WorkingK’ = Working capital requirement / Turnover</p> <p>‘Financialcharges’ = Interests and similar charges / Turnover</p> <p>‘Solvency’ = Cash flow / Financial debt</p> <p>‘Appint’ = Apparent interest rate = Interests and similar charges / Financial debt</p>
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<sup>6</sup> Gallizo and Salvador (2002) use a widely different set of active variables as it includes, along with financial indicators, indicators of the productive pattern and economic performances.

### 3. What can we learn from corporate financial patterns?

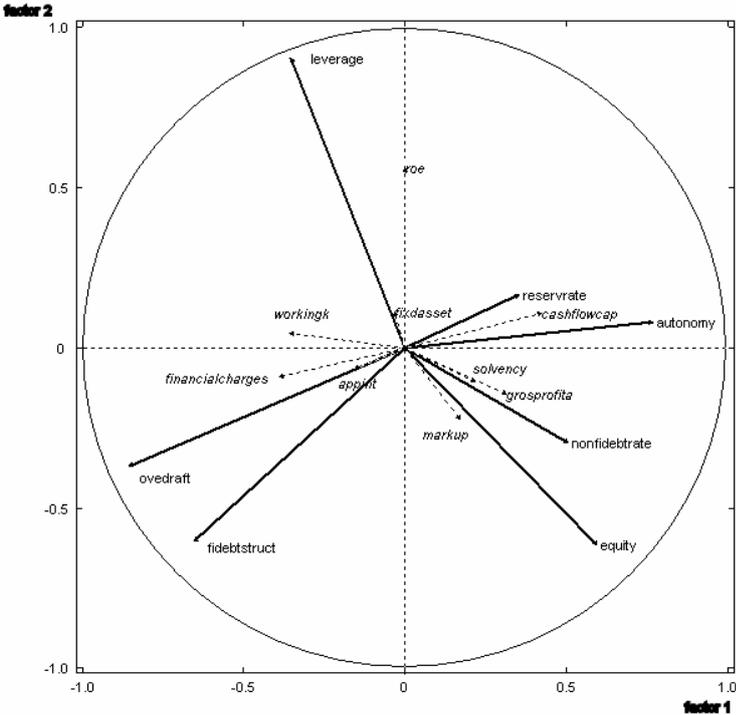
At a first step we use the largest database, that includes **all sectors** over the period 1991-2001. When the data of this sample are projected on the figure shaped by the first pair of factorial axes of the PCA, similarities or differences across countries or across size and industry cannot be showed clearly. The metaphor of the bicycle race allows us to describe the lack of evidence from the PCA. Runners can be divided into two asymmetrical groups: the bulk of not-easily identified runners and a very small number of identified runners. If the leaders do not share any common features, as they cannot be grouped either by nationality or by team, commentators would regard them only as individuals. We have a similar case here. The individual data the coordinates of which have the biggest weight in the definition of the factorial axes are similar to leaders in a bicycle race. In our case, leaders do not share any common feature. The bulk is constituted by data the coordinates of which have the smallest weight in the definition of the axes; it is concentrated near the barycentre, i.e. the intersection of the first pair of factorial axes. When all the sectors are taken into account, the diversity among the 'leaders' is high, while the number of firms near the barycentre is too large and the PCA does not provide some of the insights that one could expect.

Cluster analysis outcomes suggest a diversity among the Continental European Union economies and do not testify to a standardization of corporate financial patterns across countries. Data are grouped in three clusters. Firms of the one country are not equally found in each of the three clusters. As an extreme example, cluster 1 does not include any French firm. A few sectors have a higher frequency in one cluster than in others, but we observe neither an overall 'sector effect' nor an overall 'country effect'. Because of the strong diversity of sectors, it is not easy to get more clear-cut results and we cannot answer the

question addressed in this section. The sample needs to be more homogeneous as regards the sector. Yet in the following subsections the database only includes manufacturing sectors.

When the database is limited to **manufacturing industries only** (fig. 1-3), then similarities and differences among the financial patterns can easily be observed. Statistical outcomes are displayed in Appendix 3. Overall results of the PCA are the following. The first pair of factorial axes provides a good summary of the data as it explains 63 % of the total variance, while the first three factorial axes explain 80 % of the variance. A good quality of the data analysis is to be expected, because the number of active variables is small and some of them correlate negatively, by definition. The coordinates of the first factorial axis indicate that firms with a high ratio of stable resources ('autonomy', see table 3) contrast with those having a high ratio of net short-term financial debt ('overdraft') (fig. 1). The second axis depicts a contrast between firms with a high ratio of long-term debt ('leverage') and those with a high ratio of own funds ('equity'). These oppositions are not surprising. The most striking feature is the independence of the two pairs of variables: 'autonomy' versus 'overdraft' and 'leverage' versus 'equity'. By plotting the first and second factorial axes, this independence is visualized on figure 1. These four variables are the most discriminating, along with the financial debt structure ratio ('fidebtstruct'), that by definition positively correlates with the ratio called 'overdraft'.

**Figure 1: Active and supplementary variables\* plotted on the first pair of factorial axes  
 manufacturing firms, 1991-2001**



\*supplementary variables are in italics. Source : own calculations

Figure 1 indicates that firms with a higher rate of own funds (equity) than other firms of the sample as well as firms with a higher rate of long-term debt (leverage) finance the operating cycle in an undetermined manner : the two modes, either keeping cash and current financial assets ('autonomy'), or short-term borrowing from markets and banks ('overdraft') are observed. A higher level of net short-term financial debt ('overdraft') does not entail a higher level of long-term indebtedness ('leverage'), as indicated by the lack of correlation between these two variables (correlation equals 0.01). Independency of these two sets of criteria is a sound result. The same evidence has been produced when all sectors were taken into account (supra) and in previous studies (Rivaud-Danset *et al.* 2001). It validates the view that national financial

**Figure 2: Projection of individual data, the first pair of factorial axes,  
manufacturing firms, 1991-2001**

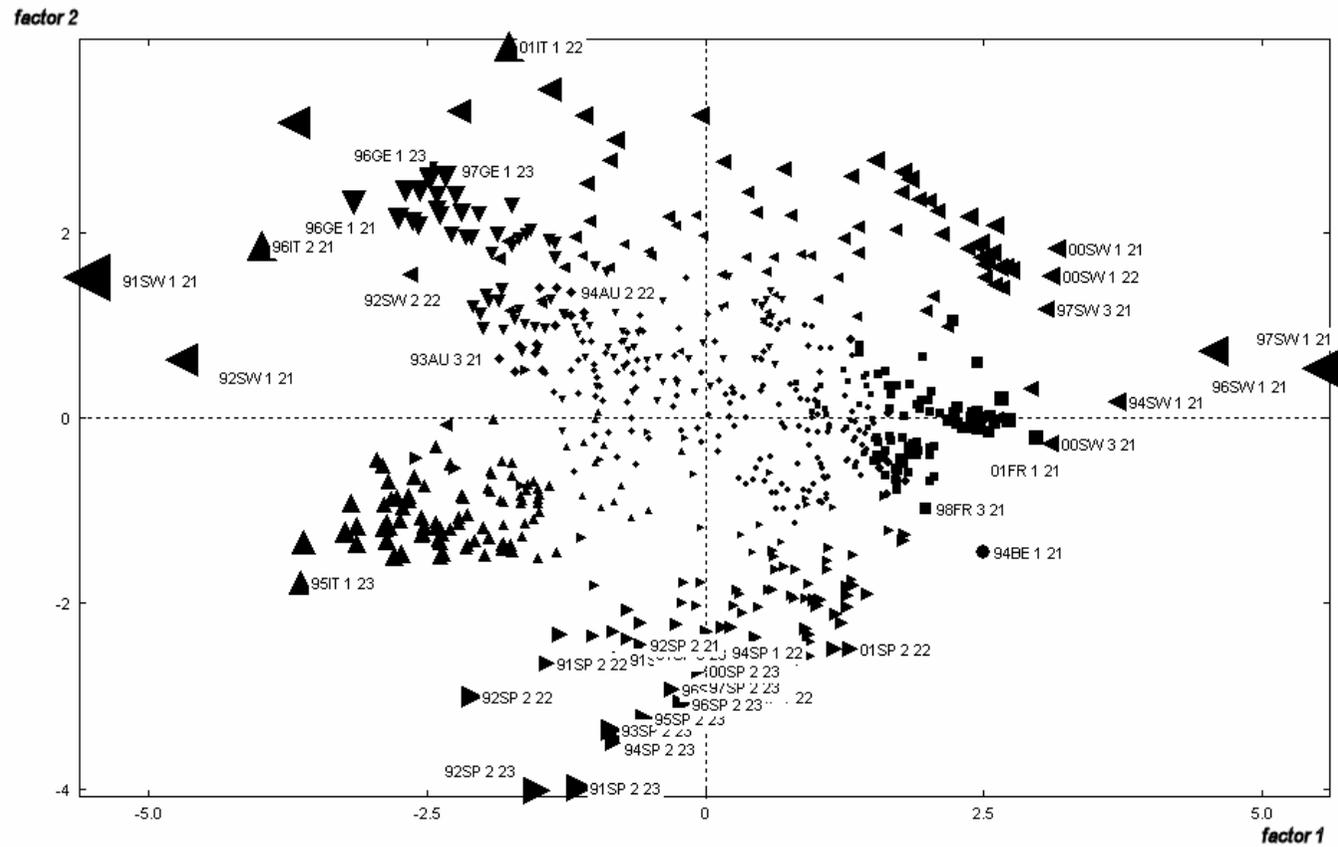
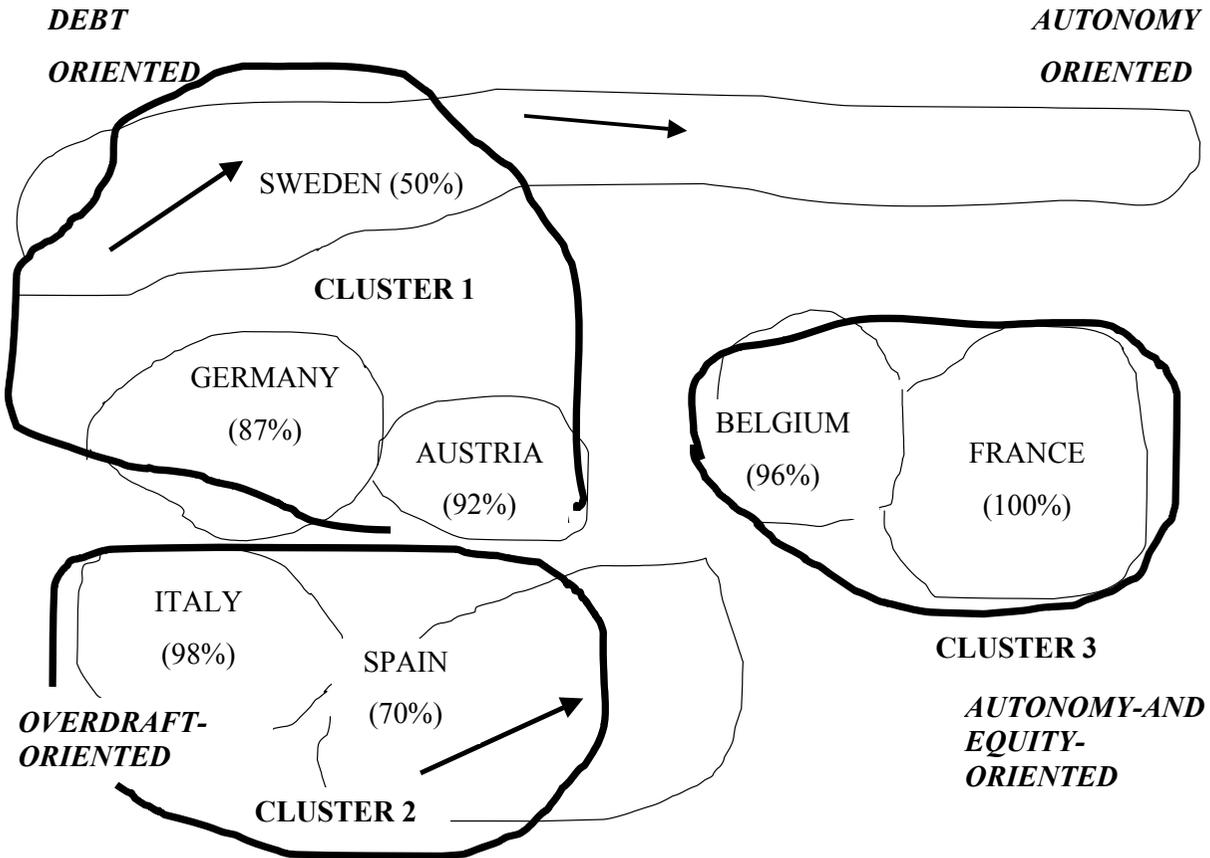


Figure 3: Simplified representation of figure 2 and clusters (manufacturing firms, 1991-2001)



systems are better characterized by using these two pairs of criteria than by using only one pair. It also validates our theoretical analytical framework : the financial pattern of long-term investment projects and the financial pattern of day-to-day business are not similar. When the database only includes manufacturing, we get a more homogeneous sample that allows us to see the grouping of individual data by country. Figures 2 and 3 testify in favour of the notion of a national financial system, as illustrated by the following example: the average small German firm producing consumer goods is more similar to the average large German firms producing investment goods, whatever the year, than to its French counterpart. When the database is limited to manufacturing industries, then significant country differences can be observed.

#### **4. Is there any model to be followed by European firms?**

The results of the PCA and the cluster analysis provide arguments to discuss the widely held belief in a single corporate model that would favour economic growth. In this section limited to manufacturing firms, we take into account profitability indicators that are classified as supplementary variables in the PCA (see table 3). Figure 1 shows that gross profitability and mark-up ratios are located not far from the barycentre, suggesting a rather loose correlation between a given financial pattern and economic profitability. This outcome testifies in favour of the idea that different financial patterns constitute different ways of achieving similar performances, performances being estimated, here, only by indicators of economic profitability. Differences in corporate financial patterns among firms do not necessarily imply the superiority of one type of system over others. This view is shared with researchers who follow a systemic perspective and reject the agency theory view of an optimal corporate governance system (Aoki, 2001, Schmidt and Tyrell, 2004).

The cluster analysis provides additional evidence. It indicates that there are distinct modes of financing which are more or less sustainable. Observations are grouped into three clusters. The hand made figure 3 has been introduced as a pedagogical device. The framework summarized by table 2 is a good guide to comment figures 2 and 3. Outcomes are displayed in appendix 4.

Cluster 1 groups firms that belong to a *debt-oriented* pattern. Short-term and long-term bank debt is the preferred source of funds. A high percentage of the German and Austrian firms belong to this cluster. Cluster 1 also includes half of the Swedish firms and, more accurately, the Swedish firms at the beginning of the 1990s. The set of variables with values significantly higher or lower than the average of the sample is the following: the rate of long-term liabilities ('leverage') and the rate of short-term financial debt ('overdraft') are higher, the rate of trade credit ('nonfidebrate') is lower; in spite of slightly lower economic performances, as indicated by lower gross profitability and mark-up ratios, return on equity (ROE) is higher because of the leverage effect. It is necessary to recall that the ratio called 'leverage' includes all stable resources that are not equity, and in particular it includes provisions. The rate of provisions is structurally very high in Austria and Germany because of the pension funds internally managed by firms for their employees. Cluster 1 looks like a classical case study, as it illustrates the positive effect of debt on the return on equity ratio, but its impact on economic growth is not defined.

Cluster 2 illustrates an *overdraft-oriented* pattern. It groups nearly all the Italian firms and 70 % of the Spanish firms of the sample. The ratio called 'overdraft' is much higher than the average, while 'leverage' is lower. The set of variables, which characterizes this cluster, does not testify to a classical corporate model. Firms rely on short-term debt. The apparent rate of interest and the financial charges ratio are higher, ROE being lower. Clearly, this atypical

complex set of variables is not an optimal one. Nevertheless, Italian firms have followed this pattern over the whole period, and this fact suggests that it has also some advantages for them. Cluster 3 illustrates an '*autonomy- and equity-oriented*' pattern. All the French firms and nearly all the Belgian ones belong to this cluster. The indicator called 'autonomy' has negative values in all the clusters, because stable resources never entirely cover fixed assets and the working capital requirement. However, the negative value of this ratio is lower in cluster 3 than in clusters 1 and 2. 'Leverage' is lower than the average while the rate of equity is higher. 'Overdraft' has a negative value and is lower than on average while the rate of trade credit is higher. The cash-flow capacity ratio and the gross profitability ratio are slightly, although significantly, higher in cluster 3 than on the average.

Is cluster 3 the model to be followed? Economic profitability being slightly higher, can we predict that firms belonging to this cluster have a bigger capacity to expand than other firms of the sample?

If we consider that firms have a large choice of sources of funds, internal and external, and that the deregulation of financial markets made possible the development of alternative instruments to bank debt, then the question has little value. In the Modigliani-Miller world, it has no value because all profitable projects would be funded, whatever the characteristics of the firms are. Following the pecking order approach of Myers and Majluf (1984), who demonstrated why corporate managers prefer to finance investment with internal funds, because of the asymmetry of information problem, the answer is ambiguous. In a Myers and Majluf world, which is closer to the real world than the Modigliani-Miller one, the choice is hierarchical: retained earnings is preferred to external sources of funds and profitability allows firms to use retained earnings rather than debt and equity to finance investment. However, the impact of profitability on economic growth depends on how we analyse the debt to equity ratio.

If we consider that the debt to equity ratio is a mere outcome, or to put it in another way if we assume that this ratio is only observed *ex post* and does not influence the investment decision, then firms grouped in cluster 3 that are more profitable and less indebted than firms of other clusters would have a higher capacity to expand. If this capacity is not used due to a lack of profitable projects, then firms that are more profitable would be less indebted than firms of other clusters with similar growth rates. A low debt to equity ratio correlated with higher profitability would characterize the model to be followed in a Myers and Majluf world.

If we consider that the debt to equity ratio is a constraint, in other words, if the mix of retained earnings and debt is analysed as a standard to be followed or a target fixed *ex ante*, before investment is decided, then the growth predictions are quite different. Preference for self-financing entails that investment becomes highly sensitive to the levels of cash flow and retained earnings and, in certain cases, it entails that new profitable projects will not be funded. If this second hypothesis is not rejected, firms grouped in this cluster may be self-rationed. To finance a given amount of investment, firms constrained by this ratio would require a higher level of retained earnings than firms that do not face financial constraints. An additional constraint comes from the autonomy pattern. A given percentage of stable resources has to remain liquid, in the case of an unexpected event resulting in the need for additional liquidity. With such hypotheses, we cannot predict that the capacity to expand is higher for firms belonging to this cluster than for the others and we cannot analyse the cluster three as a model to be followed.

Summarizing the first results, differences across countries can be observed. It suggests that the notion of national financial systems remains relevant. We do not find one model to be followed but two ways of achieving financial profitability, either by leverage (Germany) or by higher economic profitability (France), we also find an atypical cluster, the 'Italian' complex set of variables. Relationships between growth and financial variables are complex and

evidence does not allow us to conclude in favour of one pattern over another one when corporate growth matters.

## **5. Have financial patterns changed during the 1990s ?**

In this section, we address the question of whether or not financial systems have converged and explore the thesis of a joint evolution by countries that would lead to disintermediation, with banks losing importance to the markets.

***Hypothesis 1: There is a tendency toward grouping around a common financial pattern.***

This hypothesis can be tested with PCA and cluster analysis. Figures 2 and 3 show that during the whole period under review, 1991-2001, there is a general tendency for keeping the same financial pattern in each country. In five countries out of seven, manufacturing firms of the same country are permanently projected in the same quadrant shaped by the first pair of factorial axes. This evidence testifies to the permanency of differences across national financial systems. In two countries firms experienced significant changes: Spain and Sweden. In this latter case, changes are easily noticeable on figures 2 and 3; Swedish firms were classified as debt-based in 1991 (North-West quadrant) and as autonomy-based in 2001 (North-East quadrant). We have performed supplementary data analyses that bear out the lack of evidence in favour of the convergence hypothesis. Individual data broken down by sub-periods were plotted on the figures obtained by projecting the first pair of factorial axes<sup>7</sup>. In the case of a dramatic process of convergence, at the beginning of the period (1991-1993)

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<sup>7</sup> These figures are not displayed in this paper, given space limitation.

individual data would be highly spread out whilst at the end of the period (1999-2001)<sup>8</sup> individual data would be concentrated around the barycentre. PCA data are always spread out, there is no tendency toward grouping around a common financial pattern. Evidence do not testify to hypothesis 1.

***Hypothesis 2: There is a general tendency across countries toward less bank financing.***

We also aim to assess the belief in a process of disintermediation. Do data provide evidence of this process? If any, is it more obvious in bank-based countries than in market-based ones? In order to judge whether the role of banks may have changed during the last decade of the XX<sup>th</sup> century, we employ a graphical method as a first step and carry out an econometrical test as a second step. Hypothesis 2 is tested with two intermediation ratios: long-term bank debt over total balance-sheet<sup>9</sup> and short-term bank debt over total balance-sheet. As we admit that corporate size matters, these two ratios are calculated for each size of firm.

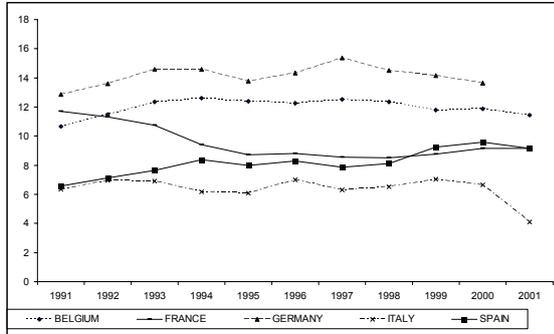
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8 These three years sub-periods have been selected to reduce the impact of the business cycle on corporate financing pattern.

9 Small Austrian firms are not in the sample. Data are not available for German firms after 2000, the long-term bank debt ratio is not available for Swedish firms, and the short-term bank debt ratio is not available for Swedish firms after 1996.

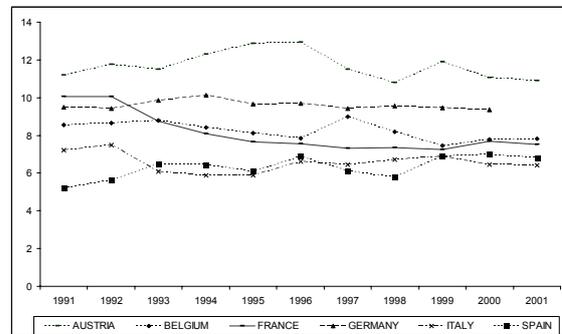
**Fig. 4.1:**

**Long-term bank debt rate,  
small manufacturing firms**



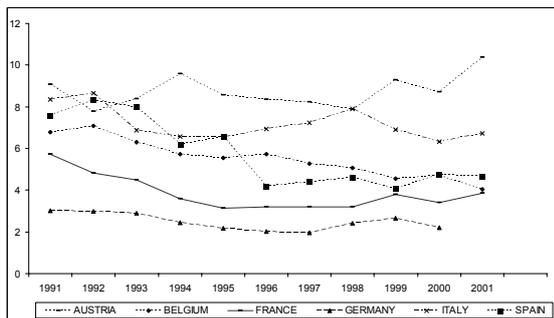
**Fig. 4.2 :**

**Long-term bank debt rate,  
medium size manufacturing firms**



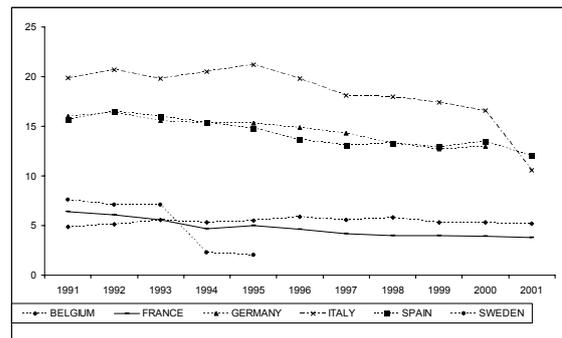
**Fig. 4.3:**

**Long-term bank debt rate,  
large manufacturing firms**



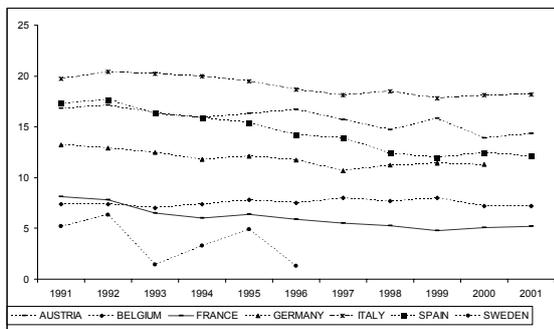
**Fig. 5.1:**

**Short-term bank debt rate,  
small manufacturing firms**



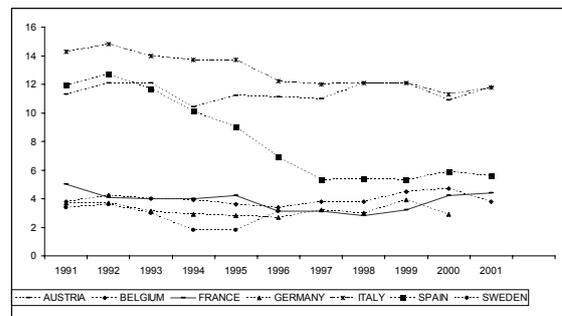
**Fig. 5.2:**

**Short-term bank debt rate,  
medium-sized manufacturing firms**



**Fig. 5.3:**

**Short-term bank debt rate,  
large manufacturing firms**



Figures 4.1, 4.2 and 4.3 indicate how the rate of long-term bank debt has evolved over eleven years (manufacturing industries only). They show that this intermediation ratio is almost constant in many cases. Yet in the case of large Austrian, French, and Spanish firms a decline can be observed at the mid-period or at the beginning of the 1990s, but this trend was reversed during the recovery of 1999-2000 in Austria and France. Figures 5.1 to 5.3 indicate how the rate of short-term bank debt has evolved. They show that this intermediation ratio has fallen in a few cases. The decline is quite noticeable in the case of small Italian firms and large Spanish firms, two countries where firms used to rely heavily on this source of funding. The decrease of this second intermediation ratio in Italy and Spain indicates that the overdraft pattern is declining. Figures 4 and 5 suggest that the hypothesis 2 should be reformulated in the following way: there is no common tendency toward less bank financing but there is a certain general tendency to reduce the use of short-term bank debt.

Now, we can come back to the assumption of convergence. According to this hypothesis, we can expect that the decreasing role of banks should have been higher in the 1990s in those countries where firms were more indebted at the beginning of the decade so that the standard deviation of intermediation ratios between countries should have been reduced during the period.

In order to test for the presence of a trend in the standard deviation series, we have carried out a regression against time trend on the following form:

$$s_t^i = aT + C$$

where  $s_t^i$  is the standard deviation of intermediation ratio  $i$  on year  $t$  for the group of countries,  $T$  is a time variable,  $C$  is a constant term. A negative coefficient would indicate a tightening dispersion of the ratio and would testify in favour of convergence for the group. The significant results<sup>10</sup> of these regressions are reported in table 4.1 and table 4.2.

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<sup>10</sup> Results are significant when  $PR > |t|$  is equal to or minor than 0.05.

**Table 4.1 : Time trend regression – standard deviation of long-term bank debt rate  
(six countries, manufacturing and all sectors)**

**Manufacturing industry only**

Size	A	C
Large size	0.03 PR> t  =0.03	-63.22 PR> t  =0.003

**All sectors**

Size	a	C
Small size	0.35 PR> t  <0.0156	-701.02 PR> t  =0.016
Large size	-0.21 PR> t  <0.0001	423.65 PR> t  <0.0001

**Table 4.2 : Time trend regression – standard deviation of short-term bank debt rate  
(six countries, manufacturing and all sectors)**

**Manufacturing industry only**

Size	a	C
All sizes	-0.13 PR> t  <0.0001	259.21 PR> t  <0.0001
Small size	-0.22 PR> t  =0.0011	445.3 PR> t  =0.001
Medium size	-0.05 PR> t  =0.05	113.68 PR> t  =0.04
Large size	-0.12 PR> t  =0.0007	234.10 PR> t  =0.0006

**All sectors**

Size	a	C
All sizes	-0.14 PR> t  <0.0001	288.96 PR> t  <0.0001
Small size	-0.22 PR> t  <0.0001	443.19 PR> t  <0.0001
Medium size	-0.08 PR> t  =0.0008	170.51 PR> t  =0.0006
Large size	-0.12 PR> t  =0.0019	251.56 PR> t  =0.0017

The standard deviation of long-term bank debt rate shows no significant trend (at the 5 percent level) for all sectors, for manufacturing industries only and all sizes (table 4.1). It is only for large firms, in the case of all sectors as a whole, that dispersion has been reduced (the value of the coefficient is negative). But in two other cases, the standard deviation ratio has a positive coefficient, which indicates a higher dispersion of this intermediation ratio. At this stage of empirical analysis, hypothesis 2 is clearly not valid.

However, the standard deviation of short-term bank debt rate shows a strongly significant trend and a negative coefficient for all sectors as a whole and for manufacturing industries only, whatever the size (table 4.2). Econometrical tests testify to the presence of a trend with regard to this second ratio.

Standard deviation tests carried out with these two ratios support the view that the observed countries have experienced a specific process of convergence toward less bank financing: cross-country differences in the use of short-term bank debt became less important whilst differences in the use of long-term bank debt remained unchanged.

Figures and econometrical tests indicate that the banking function of allocating liquidity for day-to-day business and providing a certain liquidity insurance to their clients is declining. In the case of SMEs, a decrease of short-term bank debt cannot be explained by a higher use of the market debt. Indeed, short-term market debt is in its infancy in Continental European countries and is an effective alternative source of funds only for a very limited number of large multinational companies<sup>11</sup>. Evidence suggests that changes have been pushed by banks

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<sup>11</sup> In Germany, Spain, and Italy short-term market debt is marginal (less than 1.5 % of total financial debt in 2001), while it is only significant in France (5.0 % of total financial debt in 2001) (Pansard, 2003).

rather than pulled by markets. In the EU observed countries, the current trend, if any, is more toward stable resources and self-financing than toward financial markets, as suppliers of funds. The widely spread belief in a common move away from banks toward financial markets has no empirical basis, as regards corporate financial patterns.

New reasons for changes in corporate financial patterns have to be taken into account, in order to explain these outcomes. The evolution of relationships between firms and banks in each country becomes an important factor of evolution, along with the process of globalisation of financial markets and the European financial integration. Banks are moving away from the traditional function of providing capital, for several reasons. The steady stream of bank mergers in European countries throughout the 1990s may have destabilised customers-suppliers relationships. In some European countries, firms are changing their behaviour, destabilising bank relationships. Financial managers demand funds to several banks, choosing the best offer, regardless of the importance of maintaining relationships with a particular bank. These changes may have undermined the informational advantage of banks and corporate managers' confidence in the liquidity promise given by banks. Lending tends to become standardized and detailed knowledge of borrowers activity is partly lost (Bartzolas, 2004). Furthermore, Basel I, which makes credit to non-financial firms less attractive for banks, has favoured a decrease of the role of banks as lenders; the implementation of Basel II is likely to reinforce this strategic behaviour. Yet there is little evidence of credit rationing even for SMEs, as this behaviour cannot easily be demonstrated (Wagenvoort, 2003). Our empirical analysis does not give evidence of a common trend of disintermediation, when banks act as long-term lenders. In France - a financial system that is no more largely bank-based - during the boom of the new economy (1998-2000), the role of banks as long-term

lenders has increased for larger firms, that have the biggest capacity to choose among different sources of funds. Hence, we can predict that in the beginning of the XXI<sup>st</sup> century, changes would affect particularly short-term bank debt, as banks are moving away from their specific function of providing working capital.

Coming back to our analytical framework, we suggest that the financial pattern which characterizes the overdraft pattern (cluster 2) is not sustainable if the customer-supplier relationship is destabilised. On the opposite, the pattern called autonomy-based should not be analysed as an atypical case but as a new one, although there is no corresponding cluster; in an autonomy-based pattern, short-term bank debt is no more regarded as an important source of funds and stable resources are preferred.

Little attention has been given to banks as short-term lenders in the literature. Only long-term debt is seen as being important, because of its contribution to the funding of investment and hence growth. However the funding of working capital matters. It matters mostly for SMEs, because of their difficulties in issuing debt on European financial markets. It matters especially for young and innovative SMEs, because the working capital is highly irregular. Financially sound firms with profitable projects of investment and employment may go bankrupt because they cannot finance an unexpected increase of the working capital triggered by a sudden rise in demand.

## **6. Conclusion**

In order to study the corporate financial patterns in the EU countries, we have followed an original framework. We consider that financial patterns are better analysed when two

corporate abilities are taken into account: the capacity to finance risky investment projects and the fitness to be flexible, i.e. to react to unexpected events that can be good or bad for the future of the firm. To achieve the first ability, corporate funding can rely either on equity or long-term debt. As regards the second ability, financing comes from stable resources or short-term external debt mainly supplied by banks. As our classification is governed by two pairs of alternative sources of funds, we get four virtual financial patterns.

This analytical framework allows to typify corporate financial patterns. The PCA and the cluster analysis validate its explanatory power, if data is limited to manufacturing industries only. The cluster analysis provides evidence of differences across countries. We find that countries can be grouped into three clusters called by referring to our taxonomy of financial patterns: debt-oriented, overdraft-oriented, and autonomy- and equity-oriented. Because of the complex relationship between growth and financial variables, we cannot single out one model for European firms and accept the idea that distinct financial models may coexist in the foreseeable future in Continental Europe. The pattern called autonomy-oriented cannot be observed by the cluster analysis, however this pattern characterized by a low rate of short-term bank debt is sustainable and may be followed by a growing number of European firms in the foreseeable future. We can expect such an evolution, as the cluster analysis shows that Swedish firms are moving toward this pattern, and also because econometrical tests reveal the existence of a common trend toward disintermediation of short-term financing.

Indeed, econometrical tests lead to a strong and original conclusion. On the average European firms have not decreased their reliance on long-term bank financing, but the rate of short-term debt has been reduced. We can conclude that firms have substituted stable resources and, therefore, cash holdings to short-term bank debt. This evolution reflects the

decrease in the liquidity insurance supplied by banks. Evidence testifies to the decline of one of the most traditional functions provided by banks. For centuries banks have been the financial companion of economic exchanges, allocating short-term loans for current business and providing a certain liquidity insurance to their clients, in case of contingencies. The recent development of financial markets and several other factors have oriented banks to move away from this classical function toward new patterns of intermediation and new functions. A simple shift from banks to capital markets is not the essence of changes in the observed countries, although there is a general tendency on the part of non-financial firms to reduce the role of banks as short-term lenders. Changes in corporate financial patterns have been pushed by banks rather than pulled by financial markets. We predict that the relationships between financial institutions and firms will become more long-term and more 'arm's length'.

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## Appendix 1:

**Table 1: Overview of the main empirical cross-country studies of financing patterns of European non-financial firms<sup>12</sup>**

Authors	Databases and countries	Period and scope	Indicators	Results
R.G. RAJAN and L. ZINGALES (1994)	<u>Countries:</u> US, Japan, Germany, France, Italy, UK, Canada. <u>Source:</u> Global Vantage Data	<u>Period:</u> 1991 <u>Scope:</u> a sample including only publicly traded corporations.	a) (Debt + provisions) / Total assets b) Debt / Total assets c) Debt / Net total assets d) Debt / (Debt + Net equity)	According to (a), leverage highest in Germany, Italy and France very similar. According to (b) (c) and (d), Italian firms are more leveraged than French ones and German firms less than French ones. A positive correlation between size and leverage with the exception of Germany.
J.T. KNEESHAW (1995)	<u>Countries:</u> Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Spain, Sweden, Switzerland, UK, US. <u>Source:</u> National sources and OECD	<u>Period:</u> 1992 <u>Scope:</u> all non-financial companies	a) Financial debt <sup>13</sup> / Total assets; b) Financial debt + Provisions / GDP c) Financial debt / GDP d) Net equity / GDP	According to (a), leverage higher in Germany than in France. According to the other indicators, Italian firms are the least leverage and German ones the most. Financial autonomy is greatest in France.
L. NAYMAN (1996)	<u>Countries:</u> Germany, France, Italy, UK. <u>Source:</u> OECD and BACH	<u>Period:</u> 1987-1993; <u>Scope:</u> non-financial companies	a) Credit / GDP; b) Balance Sheet structure c) Profitability	Share of external finance is higher for German and British firms lower for French ones.
M. DELBREIL <i>et al.</i> (1997)	<u>Countries:</u> Germany, Austria, Spain, France, Italy. <u>Source:</u> Balance Sheet Offices	<u>Period:</u> 1990-1993 ; <u>Scope:</u> manufacturing companies	a) Net equity / Financial resources b) Provisions / Financial Debts c) Loans from group and associates / Total debt	German firms are more leveraged on median value, less on average value than the overall sample. French firms are less leveraged and Italian firms more.

<sup>12</sup> For similar summaries of previous studies of international comparison, see Delbreil (1997) and Rivaud-Danset *et al.* (2001).

<sup>13</sup> Financial debt is supplied by financial institutions and markets.

D. RIVAUD-DANSET <i>et al.</i> (2001)	<u>Countries:</u> Austria, Belgium, Germany, Italy, Portugal, Spain, Japan, US. <u>Source:</u> BACH	<u>Period:</u> 1990-1996 <u>Scope:</u> manufacturing companies	A set of 21 indicators of financial pattern and profitability.	Financial patterns differ according to the countries especially in the case of SMEs. The indicators of profitability do not correlate with any financial pattern.
A. COBHAM (2004)	<u>Countries:</u> France, Germany, Italy, Spain <u>Source:</u> BACH	<u>Period:</u> 1988-2001 <u>Scope:</u> non-financial corporate sector	Net sources of finance (trade credit, short-term credit,...) <sup>14</sup>	Wide variation of firms across different sizes.

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14 Stock variables from BACH balance-sheet structure are used to generate flow variables.

Table A.1 provides an overview of the main empirical researches on national financial systems in Europe that compare the corporate sources of funds (studies starting in 1991 or later). Evidence does not lead to conclusive outcomes as regards the rate of indebtedness. Indeed, the assessment of leverage is highly sensitive to the selected ratio and sample. For instance, leverage is higher (smaller) for German firms than French ones when the numerator includes (excludes) provisions (Rajan and Zingales, 1994). As large public firms and small unquoted ones do not share the same financial pattern, especially in the case of Germany, international comparison is highly influenced by the weight of large firms in the sample; the mean value that reflects the behaviour of the largest firms and the median that is influenced by the smallest ones lead to distinct results (Delbreil *et al.*, 1997).

## Appendix 2

### Presentation of the Bach database

**Bank for the Accounts of Companies Harmonised** (BACH) is a database containing harmonised annual accounts statistics of non-financial enterprises for 11 European countries, Japan and the United States. The database was set up in 1987.

#### Harmonization

Accounts are "harmonised" through a common layout for balance sheets, profit and loss accounts, statements of investments and statements of depreciation. They are based on the Fourth Commission Directive (78/660/EEC of July 1978). This directive does not aim to achieve complete standardization of accounting rules; indeed several options remain open for individual Member States. Nevertheless, the main goal of the harmonization work of the Directorate General for Economic and Financial Affairs and the European Committee of Central Balance-sheet (ECCB) has been to achieve a relatively comparable framework for the statistical presentation of company accounts. The specific nature of national accounting methods and the difficulty of drawing up accounting documents *a posteriori* using a common layout thus restrict the degree of data harmonization. Harmonization is therefore still incomplete at the international level and even at the European level. Nevertheless, BACH is the most advanced publicly available database for comparisons between the financial structures and performances of SMEs and those of large companies.

#### Representativeness

The national bodies responsible for centralizing balance-sheet data supply the Commission with aggregate information. The Commission assumes that the samples used are representative as the data is published and analysed by those bodies.

#### Countries

The BACH database covers 13 countries: Austria, Belgium, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Portugal, Spain, Sweden and the United States. The present analysis takes into account 7 countries: Austria, Belgium, France, Germany, Italy, Spain and Sweden. The other countries have been excluded for different reasons: Finland and Denmark owing to missing data, the Netherlands owing to consolidated data, Portugal owing to the lack of data broken down according to the common size criterion between 1991 and 1995. Data from the United States, and Japan were not available.

## **Size**

A distinction is made between three categories of firms :

- Small companies with a turnover of less than 7 millions euros ;
- Medium-sized companies with a turnover between 7 millions and 40 millions euros ;
- Large companies with a turnover in excess of 40 millions euros.

## **Sectors**

Data have been grouped together in an aggregate common nomenclature comprising 23 sectors or sub-sectors.

Sector 1 = ENERGY AND WATER (including refining industry); Sector 2 = MANUFACTURING INDUSTRY; Sector 3 = BUILDING AND CIVIL ENGINEERING; Sector 4 = TRADE; Sector 5 = TRANSPORT AND COMMUNICATION; Sector 6 = OTHER SERVICES.

Manufacturing industry is broken down into three sub-sectors: Intermediate products (21), Investment goods and consumer durables (22), Non-durable consumption goods (23). Trade is broken down into four sub-sectors : wholesale trade, recovery services (41), sales of motor vehicles, wholesale and retail trade (42), retail trade (43), hotels-restaurants (44). The largest sample includes sectors 1, 3, 5, and 6, and the sub-sectors 21, 22, 23, 41, 42, 43, and 44. The smallest includes only the three sub-sectors of manufacturing industry.

## **Accounting Data**

The BACH accounting layout comprises a balance sheet and a profit and loss account. Assets and liabilities are given as a percentage of the total balance sheet. Profit and loss account items and statements of investment and depreciation are presented as a percentage of the turnover. In addition, the total balance sheet, the value added and the turnover are given in national currency units. The financial statements are not consolidated for the seven selected countries.

## **Principal Component Analysis**

PCA is used mainly to sort out individual data. However, the corporate data available from BACH is group data and not microdata, i.e there is only one average figure for each country\*year\*size\* sector category and balance-sheet item. Hence it is implicitly assumed that all enterprises in one category behave like the average within a given category. To put it in another way, the average firm is assumed to be a representative one.

## **Cluster Analysis**

CA sorts the output data according to each of the large components and permits the grouping of data that is most similar (a standard iterated algorithm is used to minimize the sum of squared distances from the cluster means).

The observations are divided into clusters so that every observation belongs to only one cluster. The number of clusters is chosen according to frequency so that the number of observations in each cluster is not too small.

### Appendix 3 : PCA (Manufacturing Industry, only 1991-2001)

CORRELATION MATRIX

	EQUI	LEVE	RESE	FIDE	OVER	AUTO	NONF
EQUITY	1.00						
LEVERAGE	-0.80	1.00					
RESERVE	0.20	-0.01	1.00				
FIDEBTSTRUCT	-0.14	-0.26	-0.20	1.00			
OVERDRAFT	-0.30	0.01	-0.28	0.79	1.00		
AUTONOMY	0.26	-0.09	0.16	-0.37	-0.58	1.00	
NONFIDEBTRATE	0.11	-0.36	-0.10	-0.04	-0.26	0.52	1.00

CHART OF THE FIRST SEVEN EIGEN VALUES

NUMBER	EIGEN VALUE	PERCENTAGE	CUMULATED	
1	2.6047	37.21	37.21	*****
2	1.8170	25.96	63.17	*****
3	1.2094	17.28	80.44	*****
4	0.7643	10.92	91.36	*****
5	0.3953	5.65	97.01	*****
6	0.1638	2.34	99.35	*****
7	0.0456	0.65	100.00	**

POSITION OF INTERVALS

1	.....*
2	.....*
3	.....*
4	.....*
5	*+*.....

COORDINATES ON COMPONENTS 1 AND 2

ACTIVE VARIABLES	COORDINATES	CORRELATIONS
	1	2
EQUI - equity	0.59	-0.61
LEVE - leverage	-0.35	0.90
RESE - reservrate	0.35	0.17
FIDE - fidebtstruct	-0.65	-0.60
OVER - overdraft	-0.85	-0.37
AUTO - autonomy	0.77	0.08
NONF - nonfidebtrate	0.50	-0.30

SUPPLEMENTARY VARIABLES	COORDINATES	CORRELATIONS
	1	2
CASH - cashflowcap	0.43	0.11
ROE - roe	0.00	0.56
GROS - grosprofita	0.32	-0.14
MARK - markup	0.17	-0.22
FIXA - fixdasset	-0.03	0.11
WORK - workingk	-0.36	0.05
FINA - financialcharges	-0.39	-0.09
SOLV - solvency	0.22	-0.10
APPI - appint	-0.15	-0.07

## Appendix 4: Cluster Analysis (Manufacturing Industry only, 1991-2001)

DESCRIPTION OF PARTITION

DESCRIPTION FROM THE CUT 'a' OF THE TREE IN 3 CLUSTERS

CLUSTER 1 / 3

V.TEST	PROBA	MEAN		STANDARD DEVIATION		VARIABLES	IDEN
		CLUSTER	SAMPLE	CLUSTER	SAMPLE		
CLUSTER 1 / 3 (WEIGHT = 190.00)							aa1a
16.42	0.000	54.92	42.10	9.23	12.81	6.leverage	LEVE
10.03	0.000	32.19	25.33	13.88	11.22	13.roe	ROE
4.70	0.000	3.40	1.33	5.67	7.23	9.ovedraft	OVER
4.53	0.000	31.50	28.19	18.70	11.99	17.workingk	WORK
3.65	0.000	55.74	51.78	21.46	17.78	7.reservrate	RESE
3.30	0.000	45.39	40.45	33.17	24.60	16.fixdasset	FIXA
-2.55	0.005	13.27	14.82	9.51	9.95	20.appint	APPI
-2.90	0.002	9.08	9.46	2.40	2.17	15.markup	MARK
-5.10	0.000	13.80	15.11	4.68	4.22	14.grosprofita	GROS
-7.11	0.000	-17.58	-13.40	10.53	9.65	10.autonomy	AUTO
-10.87	0.000	28.10	33.61	7.80	8.32	5.equity	EQUI
-18.68	0.000	29.47	44.11	8.17	12.86	11.nonfidebrate	NONF

CLUSTER 1 / 3

V.TEST	PROBA	CLUSTER (%)	SAMPLE (%)	VARIABLES
12.21	0.000	86.67	14.02	GERMANY country
11.32	0.000	92.42	10.28	AUSTRIA country
4.30	0.000	50.00	14.02	SWEDEN country
2.33	0.010	35.56	35.05	SIZE = 2 size

CLUSTER 2 / 3

V.TEST	PROBA	MEAN		STANDARD DEVIATION		VARIABLES	IDEN
		CLUSTER	SAMPLE	CLUSTER	SAMPLE		
CLUSTER 2 / 3 (WEIGHT = 167.00)							aa2a
19.67	0.000	139.76	69.85	39.67	53.35	8.fidebtstruct	FIDE
15.80	0.000	8.94	1.33	3.93	7.23	9.ovedraft	OVER
8.54	0.000	4.80	3.25	3.36	2.73	18.financialcharges	FINA
5.23	0.000	32.37	28.19	5.01	11.99	17.workingk	WORK
4.50	0.000	17.80	14.82	11.19	9.95	20.appint	APPI
2.86	0.002	46.56	44.11	5.28	12.86	11.nonfidebrate	NONF
-2.46	0.007	14.42	15.11	3.22	4.22	14.grosprofita	GROS
-5.48	0.000	45.30	51.78	14.33	17.78	7.reservrate	RESE
-6.76	0.000	5.64	7.19	2.24	3.45	12.cashflowcap	CASH
-9.64	0.000	-19.60	-13.40	5.78	9.65	10.autonomy	AUTO
-10.13	0.000	33.46	42.10	9.68	12.81	6.leverage	LEVE
-10.44	0.000	17.53	25.33	6.72	11.22	13.roe	ROE

CLUSTER 2 / 3

V.TEST	PROBA	CLUSTER (%)	SAMPLE (%)	VARIABLES
17.12	0.000	97.98	15.42	ITALY country
10.21	0.000	70.71	15.42	SPAIN country

CLUSTER 3 / 3

V.TEST	PROBA	MEAN		STANDARD DEVIATION		VARIABLES		IDEN
		CLUSTER	SAMPLE	CLUSTER	SAMPLE			
		CLUSTER 3 / 3		(WEIGHT = 285.00)				aa3a
15.06	0.000	-6.96	-13.40	6.38	9.65	10.autonomy		AUTO
14.63	0.000	52.43	44.11	9.81	12.86	11.nonfidebrate		NONF
9.68	0.000	37.16	33.61	6.51	8.32	5.equity		EQUI
6.87	0.000	16.40	15.11	4.05	4.22	14.grosprofita		GROS
6.01	0.000	8.11	7.19	3.99	3.45	12.cashflowcap		CASH
3.21	0.001	0.65	0.60	0.44	0.36	19.solvency		SOLV
-6.14	0.000	38.63	42.10	9.62	12.81	6.leverage		LEVE
-6.83	0.000	2.43	3.25	1.15	2.73	18.financialcharges		FINA
-8.79	0.000	23.52	28.19	6.04	11.99	17.workingk		WORK
-15.45	0.000	33.41	69.85	26.19	53.35	8.fidebtstruct		FIDE
-18.27	0.000	-4.51	1.33	4.04	7.23	9.ovedraft		OVER

CLUSTER 3 / 3							
V.TEST	PROBA	CLUSTER (%)	SAMPLE (%)				
13.30	0.000	100	15.42	FRANCE	country		
11.90	0.000	95.96	15.42	BELGIUM	country		