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CONVERGENCE OF EUROPEAN FINANCIAL SYSTEMS: SINGLE FINANCIAL SPACE?

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Abstract

This paper investigates some key aspects of convergence towards a single financial space in the EU in the context of the activities of banks, capital (stock and bond) markets and internal funds as sources of financing investment by non-financial companies (NFCs), and in terms of whether the economies are converging towards an Anglo-Saxon (capital market oriented) or a Continental (bank oriented) financial system. The paper proposes and implements novel applications of econometric tests for convergence (hitherto popularised in the economic growth literature) to OECD flow of funds data for the period 1972-1996 for seven EU member countries: Finland, France, Germany, The Netherlands, Spain, Sweden and the UK. The evidence suggests some form of overall convergence of the EU financial systems on a variant of the Anglo-Saxon model, depicting heavy reliance on internal financing as well as direct financing via equity and bond markets, while bank debt is becoming relatively less important.

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1. Introduction

A contrast is often drawn between Anglo-Saxon (capital market oriented) financial systems, as represented by the UK, and Continental (banking oriented) financial systems, as typified by Germany (Doukas, Murinde and Wihlborg, 1998, p.10). It is useful, however, to draw a distinction between the terms "banks" and "banking" in the sense that the latter involves bank lending via the creation of demand deposits in connection with a debt contract between the bank and the borrower, deposit taking and the provision of associated money transmission services to the public. Increasingly, however, banks, especially in the EU, are engaging in both banking and securities business *i.e.* universal banking, fund management and, more recently, insurance business ("bancassurance" or "Allfinance"). The term "bank oriented" may therefore have various interpretations. It could mean a system in which banks are the dominant institutions providing both indirect (or intermediated debt) finance and access to direct finance from the money and capital markets via instruments such as commercial bills and paper (money market debt finance), bonds and Euro-notes (capital market debt finance) or shares (capital market equity finance), *inter alia*. The key distinctions here are between direct and indirect finance and between debt and equity financing. Since banking fundamentally involves the provision of indirect finance, "bank oriented" could more narrowly be taken to mean that the most important source of external financing for non-financial companies (NFCs) is bank loans.

Recent studies (e.g. Corbett and Jenkinson, 1994; Bertero, 1994; Edwards and Fischer, 1994) show that in most OECD countries bank lending is the most important source of external financing, but that internal financing from retained profits is overall the most important source of financing. There is also some evidence of a shift from bank loans to direct financing from the capital (and particularly the bond) markets as part of the securitisation process associated with the financial liberalisation of the 1980s. In addition, these studies stress the importance of asymmetric information and principal-agent problems in understanding the interaction of financial institutions and non-financial corporations, highlighting the corporate governance role of financial institutions. In this context, a bank oriented system could be viewed as one in which banks are the key financial institutions as regards corporate governance by virtue of being both providers of debt finance and the key institutional holders of equity, as in the Universal Banking system of Germany (and to some extent France (Bertero, 1994)) and in the Japanese system. In contrast, in capital market oriented systems the key institutional shareholders are pension and

insurance funds. This is especially true in the UK, where share ownership is heavily concentrated (see Mayer, 1994). Hitherto, the institutional shareholders in the UK have not exercised their voting rights (including proxy voting rights) as actively as the German Grossbanken. The capital markets in the UK also influence management behaviour via the threat posed by aggressive mergers and acquisitions activity. In contrast, in continental Europe, unsolicited take-over bids have, at least until recently, been largely unknown.

This "battle of the systems" (Walter, 1993), regarding the relative merits of the bank oriented and capital market oriented systems of corporate governance, is integral to the policy debates relating to the evolution of financial systems in the EU member countries following the Single European Market of 1993. If direct financing is increasing relative to bank financing, the capital markets will have a greater role to play in the future in hitherto bank dominated financial systems. To the extent that bank oriented systems are more "long-termist", this trend may lead to a spread of "short-termism" in investment and "research and development" expenditure decisions. Counteracting this development, and helping to deepen capital markets in previously bank-dominated system, the privatisation of pensions, in response to ageing population, and the associated budgetary pressures being caused by maintaining "pay-as-you go" state pension schemes, will lead to a build up of pension funds. These funds will increasingly invest in shares (stocks/equities) as restrictions requiring large proportions of the funds in domestic government bonds are removed in response to competitive pressures to achieve acceptable returns for the investors. Because pension funds are dealing with long term savings they naturally take a strategic view and this should help counteract any bias towards short-termism. The creation of the single currency area within the EU ("Euroland") is expected to give a boost to the corporate bond market, which is much less developed in EU countries than in the US. The expected rapid growth in the Euro-based corporate bond market will further reduce the role of bank loans as a source of debt finance. Large corporates have long had access to the Euromarkets, but it is expected that bank debt will be increasingly used to finance small to medium sized companies.

Singular among the many expectations of EU member countries was that the launching of a borderless Europe in January 1993 would impact on the financial systems of the member countries by facilitating the achievement of a single financial space in the EU. This has moved a step closer with the decision to proceed with the creation of a single currency to be adopted by

most of the EU states. In "Euroland", the shift towards convergence can be expected to accelerate.

This paper investigates whether there has been some convergence towards a single financial space in the EU in terms of the activities of banks, stock markets and bond markets as sources of funding for investment by NFCs. The idea is to determine whether or not there has been a systematic change in the relative shares by banks, stock markets or bond markets in the overall capital structure of the NFCs. A test for convergence is used to indicate if there has been a shift towards a sustained increase in the relative share of bank financing as a percentage of the total capital structure of NFCs, given an initial level (say at 1972), in a manner that suggests the economies are moving towards a bank oriented system. Similarly, the convergence test is applied to determine if there has been a shift towards a sustained increase in the relative share of equity (and/or bond) financing as a percentage of the total NFC investment financing, given an initial level, in a manner that suggests the economies are moving towards a capital market oriented system. Finally, the convergence test is applied to determine if there has been a shift towards a sustained increase in the relative share of internal finance as a percentage of the total NFC investment financing, given an initial level, in a manner that suggests the managers of the NFCs behave in conformity with the pecking-order theory of financing choices and hence utilise retained earnings first before they resort to debt, equity or bond financing[1]. Hence the convergence tests will, *inter alia*, also shed light on whether the financial systems of EU member countries are converging towards a "bank oriented" or a "capital market oriented" model.

The paper makes at least three major contributions. First, it proposes and implements a novel application of econometric tests for convergence of the financial systems of the EU member countries with special reference to the financing of NFCs, hence shedding light on the interaction between the financial and real sectors in the context of the convergence criteria. Second, it covers the period in which there has been substantial financial innovation, liberalisation and regulatory reform. The process started in the 1970s in some of the countries under study here (e.g. the UK; see Mullineux, 1987a) and accelerated in the 1980s, particularly from the mid 1980s in the UK and France (Mullineux, 1987b; Bertero, 1994). Broadly, the 1970s can be regarded as the decade of internationalisation (Pecchioli, 1983) and the 1980s as the decade of securitisation[2] leading into an explosion in the use of derivatives in the late 1980s

early 1990s. During this period, exchange rate controls have been progressively lifted both outside and within Europe, banking system and stock-exchanges have been deregulated and reformed and a new regulatory and supervisory systems have been devised through the work of the Basle Committee. The net result of these international processes, combined with the single financial market programme within the EU (Mullineux, 1992), has been an increase of competition within and between member country banking systems and between these systems and capital markets, particularly with regard to providing finance to NFCs. The process of securitisation might be expected to have led to convergence in the EU and, if it continues, to encourage further convergence. The growing competition amongst alternative financial systems within the EU and between the EU and other countries can also be expected to force convergence. A similar array of financial products has increasingly become available in all countries as 'gaps' in the market are progressively identified and exploited. Third, the paper yields evidence which, in some respects, complements the findings of previous work (Corbett and Jenkinson, 1994; Bertero, 1994; Edwards and Fischer, 1994); it is found that in the EU member countries, and for most of the period 1972-1996, equity financing was increasing in importance, but that internal financing from retained profits was overall the most important source of financing.

The remainder of the paper is structured into three sections. Section 2 discusses the approach taken to model convergence in this paper. The estimation and testing results are reported in Section 3. Section 4 concludes.

2. Modelling Convergence of Financial Systems

Convergence has been mainly modelled using time series, cross-section and panel data techniques with respect to economic growth models. The time series techniques tend to rely on rho (σ) convergence, measured as a change in the variance (σ^2) of a given variable (e.g. $ln\ Y$) in order to establish whether the dispersion of the variable has actually increased over time. In the growth models, rich countries tend to give estimates of weak σ convergence; the variance typically falling by about 0.01 while the poor country prices tend to indicate that the rate of convergence is much higher, of the order of 0.03 (see Bernard and Darluf, 1996).

In addition, most of the recent empirical literature uses regression analysis to test for beta convergence, or conditional regression to the mean. Quah (1993) has demonstrated that although rho implies beta, the reverse is not implied. However, beta convergence can be regarded as rho convergence conditional on other random influences on growth. This involves running an OLS regression:

$$g_i = a + by_i(0) + e_i(t) \qquad (1)$$

where $g_i = y_i(t) - y_i(0)$, and $y_i(t)$ is the logarithm of per capita GDP at time t for country i; g_i is the growth rate from time zero to time t, and by construction $\text{cov}(e_i, y_i(0)) = 0$. It is straightforward to show that a necessary, but not sufficient, condition for the variance of y to decline over time is that the mean reversion coefficient beta is negative, since $\text{Var}(y_i(t) = (1 + \beta)^2 Var(y_i(0)) + Var(e_i)$. The random noise will tend to increase the variance. The idea is that the degree of mean reversion must be sufficiently high relative to the level of noise if the variance is to fall. The sufficient condition is $\beta(2 + \beta) > Var(e_i) / Var(y_i(0))$ which is equivalent to $R^2 > \beta/2$. If mean reversion overshoots the mean sufficiently, $\beta < -2$, dispersion actually increases as the ordering of GDP is reversed.

This paper proposes and implements a novel application of modelling convergence in the context of financial systems, encompassing banks, equity markets and bond markets. The literature on the microeconomics of the banking firm has tended to focus on the existence of economies of scale and economies of scope in the banking industry. In contrast to the neo-classical growth model and endogenous growth models used in the growth literature, the early studies started with a standard log linear Cobb-Douglas production function of the following form:

$$q = \gamma_0 + \alpha k + \beta m \qquad (2)$$

where q is an output measure (e.g. bank finance for NFCs), k and m are factor inputs into the bank production process. However, this entailed a strong assumption regarding the shape of the cost function *i.e.* returns to scale are assumed to be increasing everywhere ($\beta < 1$), constant everywhere ($\beta = 1$) or decreasing everywhere ($\beta > 1$), thus a u-shaped curve is not possible. To circumvent these limitations, a multiproduct translog production function is used:

$$q = \gamma_o + \Sigma_i \alpha_i k_i + 0.5 \Sigma_i \Sigma_j \beta_{ij} m_j k_i \qquad (3)$$

where $\beta_{ij} = \beta_{ji}$ for all i, j. A key output of the banking firm comprises loans to the business sector, and thus amounts to bank financing of the NFCs in this paper.

The modelling procedure used for testing for convergence, based on equation (3), was initially based on cross-section tests of unconditional and conditional convergence. The cross-section unconditional convergence tests were constructed as follows:

$$g_{i,T} = \alpha + \beta q_{i,0} + \varepsilon_{i,T} \qquad (4)$$

where $g = q_t - q_{t-1}$, and T is a fixed horizon. Conditional convergence tests are constructed by modifying equation (4) to include control variables:

$$g_{i,T} = \alpha + \beta q_{i,0} + \pi x_{i,T} + \varepsilon_{i,T} \qquad (5)$$

where $x_{i,T}$ denotes a vector of control variables.

Rather than using cross-section estimation, we used a GMM estimator of the dynamic fixed effects model with panel data to estimate the following equation with respect to the growth of output of the banking sector, based on equation (3):

$$BFG_t = \alpha + \beta_1 BFG_{t-1} + \beta_2 BFG_{t-2} + \beta_3 BFY_t + \pi_1 BMY_t + \pi_2 ER_t$$

$$+ \pi_3 IR_t + \pi_4 OPEN_t + \varepsilon_{i,T} \qquad (6)$$

where *BFG* is the growth rate of bank finance to the NFCs; *BFY* is the initial level of bank loans (at 1972); *BMY* is the financial deepening variable, calculated as the ratio of broad money (M2) to GDP; *ER* is the nominal exchange rate; *IR* is the nominal interest rate; *OPEN* is a measure of the degree of openness, calculated as the ratio of exports and imports to total GDP. The control variables *BMY, ER* and *IR* are consistent with the idea of monetary convergence stipulated by the European Commission. The monetary policy variables *ER* and *IR* could be interpreted here to infer the potency of the respective policy instrument to the achievement of convergence.

As earlier noted the dichotomy between bank oriented financial systems and capital market oriented financial systems implies the need for considering equity as an additional element to bank debt in the capital structure of NFCs. We extend the above convergence tests for the EU banking systems to focus on the role of equity markets *i.e.* the provision of equity

finance in the capital structure of NFCs, in line with modern corporate finance theory. To test for convergence of equity markets in the EU member countries, we apply a GMM estimator of the dynamic fixed effects model with panel data to estimate the following equation with respect to the growth of output of the equity markets, namely equity financing of the NFCs:

$$EIG_t = \alpha + \beta_1 EIG_{t-1} + \beta_2 EIG_{t-2} + \beta_3 EIY_t + \pi_1 BMY_t + \pi_2 ER_t + \pi_3 IR_t + \pi_4 OPEN_t + \varepsilon_{i,T} \quad (7)$$

where *EIG* is the growth rate of equity finance to the NFCs; *EIY* is the initial level of equity finance (at 1972). In this setting, the control variables BMY, ER and IR are consistent with the idea of monetary convergence stipulated by the European Commission; the monetary policy variables ER and IR could be interpreted here to infer the potency of the respective policy instrument to the achievement of convergence of equity markets in the EU member countries.

In addition to bank debt and equity finance, bond issues are an important element of the capital structure of NFCs, according to modern corporate finance theory. Moreover, one would expect that bond issues are likely to become more important in "Euroland" if the EU financial system converges on the US model. We extend the above convergence tests for the EU banking systems and equity markets to focus on the role of the bond market *i.e.* corporate bond issues. To test for convergence of the bond in the EU member countries, we apply a GMM estimator of the dynamic fixed effects model with panel data to estimate the following equation with respect to the growth of output of the corporate bond markets, namely bond issues for the financing of NFCs:

$$BIG_t = \alpha + \beta_1 BIG_{t-1} + \beta_2 BIG_{t-2} + \beta_3 BIY_t + \pi_1 BMY_t + \pi_2 ER_t + \pi_3 IR_t + \pi_4 OPEN_t + \varepsilon_{i,T} \quad (8)$$

where *BIG* is the growth rate of bond financing by the NFCs; *BIY* is the initial level of bond issues (at 1972). The monetary policy variables *ER* and *IR* could be interpreted here to infer the potency of the respective policy instrument to the achievement of convergence of corporate bond markets in the EU member countries.

The pecking order theory of financing choices stipulates that managers prefer the use of internal fund (e.g. retained earnings) before they resort to bank debt finance and equity

financing. To integrate the implications of this theory in our analysis, we extend the above convergence tests for the EU banking systems, equity markets and bond markets to focus on the role of internal finance in the capital structure of NFCs. To test for convergence towards the use of internal finance by the NFCs in the EU member countries, we apply a GMM estimator of the dynamic fixed effects model with panel data to estimate the following equation:

$$IFG_t = \alpha + \beta_1 IFG_{t-1} + \beta_2 IFG_{t-2} + \beta_3 IFY_t + \pi_1 BMY_t + \pi_2 ER_t$$

$$+ \pi_3 IR_t + \pi_4 OPEN_t + \varepsilon_{i,T} \qquad (9)$$

where *IFG* is the growth rate of internal financing by the NFCs; *EIY* is the initial level of the use of internal finance by NFCs (at 1972). The control monetary policy variables *BMY, ER* and *IR* are consistent with the idea of monetary convergence stipulated by the European Commission, but also capture the potency of the respective policy instrument to the achievement of convergence by the EU member countries in the context of the use of internal finance by NFCs.

The data are taken from the OECD[3] flow of funds tables and cover the period 1972-1996 for 7 EU member countries: Finland, France, Germany, The Netherlands, Spain, Sweden and the UK. The flows of funds tables are produced in accordance with the internationally agreed System of National Accounts (SNA) for 1993. The tables record gross sources and gross uses of funds for NFCs in Finland, France, Germany, The Netherlands, Spain, Sweden and the UK in domestic currency (nominal) and percentage (of the total) in each year.

Unlike Corbet and Jenkinson (1994) and Mullineux (1996), we do not use net flows and so our results are not directly comparable with their findings or the findings of Bertero (1994) and Edwards and Fischer (1994). Despite the fact that the gross flows used in this study over-record investment financing, the netting procedure may at times hide some important developments. Debt can at times be raised to retire equity and vice versa. During booms of mergers and acquisitions debt and equity can be raised to buy equity (and control) of other firms, rather than to fund physical investment. As a result of the take-over a net reduction in equity outstanding may occur (the shareholdings in the firm 'taken-over' disappear as the shareholders are paid off) and yet there has been an investment of a sort by the successful bidder, which now owns the assets of the firm that has disappeared. We should thus not be surprised to see negative net flows of equity in periods of high mergers and acquisition activity (*i.e.* mainly in

the UK, given their aforementioned different tradition in the M&A sphere to 'continental' EU countries). Negative equity flows can often occur when companies use retained profits or newly raised debt to retire equity in response to changes in the relative cost of debt (and opportunity cost of internal finance) and equity; given that equity flows are generally much smaller than internal funding and bank lending flows, even in the UK.

Although the OECD flows of funds data are based on the SNA, Corbett and Jenkinson (1994) observe that in each of the countries they studied (the US, the UK, Germany and Japan) there were significant divergences of the data supplied to the OECD from agreed SNA conventions. In this paper we take the data as given; however, we use percentages of the total in order to ensure greater comparability. Nevertheless, for future research we believe that company accounting data would have to be employed in order to achieve disaggregation by size of firm and maturity of loans.

3. Estimation and Testing Results

The estimation and testing results for the convergence hypothesis with respect to bank debt, equity finance, bond issues and internal finance, as reflected in equations (6) - (9) are reported in Tables 1-4, respectively.

The results reported in Table 1 are at variance with the hypothesis that there has been a tendency towards convergence among the EU member countries in terms of the use of bank debt finance by NFCs. It would appear that over time and across the seven countries the NFCs have not shifted towards the use of bank debt for financing new investment. Although the results for all the six model variants show the expected negative sign on the initial level of bank productivity (at 1972), tied down by variable *BFY*, there is hardly any statistically significant estimates. Hence we cannot regard the results as providing reliable evidence that the EU member countries are converging towards a bank oriented system, in the context of an increase in the relative share of the banking system (compared to equity and bond markets) in the overall financing of new investment by NFCs. Indeed, these results suggest that the relative bank finance share is declining. These results hold irrespective of whether we test for unconditional convergence or whether we condition banking system convergence on a number of key policy variables namely the financial deepening variable, the nominal exchange rate, the nominal interest rate and a measure of the degree of openness. The implication is that the nominal

exchange rate and the interest rate are not potent monetary policy instruments in facilitating the convergence of the banking sector in the seven EU member countries.

Although our data are different from those used by Corbett and Jenkinson (1994), Bertero (1994) and Edwards and Fischer (1994), we find that our findings are consistent with their conclusions. These authors, as well as Mullineux (1996), find that the level of bank financing is similar in gross terms in Germany and the UK, the two countries that are *de-facto* characterised by different banking systems. Our results do not exhibit convergence perhaps because much further convergence cannot be expected, given the level of similarity in bank financing in these countries as documented by the above authors.

Table 1.GMM estimation results for the dynamic fixed effects model
Dependent variable: Growth of bank finance (BFG)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-0.860	-0.040	-1.147	-1.036	-3.618	-3.292
	(0.346)	(0.979)	(0.303)	(0.380)	(0.122)	(0.348)
BFG(-1)	-0.013	-0.065	-0.019	-0.029	-0.019	-0.130
	(0.915)	(0.649)	(0.783)	(0.851)	(0.894)	(0.573)
BFG(-2)	0.149	0.130	0.137	0.134	0.125	0.065
	(0.312)	(0.382)	(0.362)	(0.470)	(0.456)	(0.787)
BFYo	-0.454	-0.436	-0.537	-0.427	-0.041	0.156
	(0.503)	(0.514)	(0.446)	(0.611)	(0.961)	(0.899)
BMY	-	-1.293	-	-	-	-2.181
		(0.492)				(0.474)
ER	-	-	0.006	-	-	0.000
			(0.661)			(0.986)
IR	-	-	-	0.011	-	0.015
				0.607		(0.594)
OPEN	-	-	-	-	6.345	8.257
					0.191	(0.243)
Wald test	1.894	2.416	2.076	1.498	3.200	2.553
	3	4	4	4	4	7
Sargant test	27.057	27.282	26.713	17.361	19.521	9.651
	19	18	18	18	18	15
No of countries:	7					
Observation:	119					
Sample period:	1972-1996					

- * significant at 10%, ** significant at 5%
- values in parentheses are p-values

BFY_0 is initial level of the share of bank finance (at 1972),
BMY is ratio of broad money to GDP,
ER is the nominal exchange rate,
IR is the nominal interest rate,
OPEN is the ratio of export and import to GDP.

Table 2. GMM estimation results for the dynamic fixed effects model
Dependent variable: Growth of equity issues (EIG)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-16.060**	-11.025	-16.174**	-16.141**	-17.976*	-14.665
	(0.001)	(0.111)	(0.004)	(0.002)	(0.003)	(0.147)
EIG(-1)	-0.188	-0.362*	-0.187	-0.188	-0.180	-0.352*
	(0.197)	(0.074)	(0.201)	(0.199)	(0.231)	(0.090)
EIG(-2)	-0.232*	-0.427**	-0.232*	-0.232*	-0.232*	-0.431**
	(0.066)	(0.019)	(0.067)	(0.067)	(0.074)	(0.019)
EIY	-5.397**	-6.910**	-5.427**	-5.418*	-5.409*	-7.552**
	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.003)
BMY	-	-15.279**	-	-	-	-15.735**
		(0.008)				(0.009)
ER	-	-	0.001	-	-	0.020
			(0.962)			(0.530)
IR	-	-	-	0.001	-	-0.001
				(0.897)		(0.934)
OPEN	-	-	-	-	3.597	2.941
					(0.537)	(0.736)
Wald test	11.431	13.631	11.343	11.333	11.136	13.667
	3	4	4	4	4	7
Sargant test	45.796	19.350	45.433	45.318	42.707	18.415
	19	18	18	18	18	15
No of countries:	7					
Observation:	119					
Sample period:	1972-1996					

- * significant at 10%, ** significant at 5%
- values in parentheses are p-values

EIY_0 is initial level of the share of internal finance (at 1972), the rest of the variables are as defined in Table 1.

Table 2 reports the estimation and testing results for the hypothesis that there has been a tendency towards convergence among the EU member countries in terms of the use of equity finance by NFCs. The results for all the six model variants show the expected negative sign on the initial level of equity productivity (at 1972), tied down by variable *EIY*, with all the estimates statistically significant. Thus the results strongly support the convergence hypothesis, suggesting that over time and across the seven EU member countries the NFCs have generally shifted towards the use of equity finance for new investment; the stock markets have also increasingly become important as a means of raising equity finance for new investment by NFCs. However, the UK remains a bit of an outlier. We therefore regard the results as providing reliable evidence that the EU member countries are converging towards a capital market oriented system, in the context of an increase in the relative share of the equity market (compared to that of banks and bond markets) in the overall financing of new investment by NFCs. We find that the dynamics become important in the second (but not the first) year i.e. *EIG(-2)*, rather than *EIG(-1)*, is significant. These results hold irrespective of whether we test for unconditional convergence or whether we condition equity market convergence on a number of key policy variables namely the financial deepening variable, the nominal exchange rate, the nominal interest rate and a measure of the degree of openness. The financial deepening variable (in models 2 and 6) is statistically significant with a negative sign, suggesting that banking sector intermediation activities (tied down by the broad money indicator M2) tend to reduce the degree of growth in the equity issues of NFCs. The nominal exchange rate and the interest rate are not potent monetary policy instruments in facilitating the convergence of the equity markets in the seven EU member countries.

The evidence summarised in Table 3 suggests that there has been a tendency towards convergence among the EU member countries in terms of the use of company bond finance by NFCs. It is shown that over time and across the seven countries the NFCs have shifted towards the use of bond issues to finance new investment.

Table 3 GMM estimation results for the dynamic fixed effects model
Dependent variable: Growth of bond issues (BIG)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-20.945	-22.390	-30.493	-19.354	-21.197	-29.444
	(-0.423)	(-0.658)	(0.632)	(0.705)	(0.672)	(0.702)
BIG(-1)	0.026	0.025	0.024	0.032	0.025	0.031
	(0.843)	(0.855)	(0.856)	(0.815)	(0.894)	(0.830)
BIG(-2)	-0.062	-0.072	-0.078	-0.062	-0.064	-0.0907
	(0.870)	(0.857)	(0.846)	(0.878)	(0.872)	(0.832)
BIY	-0.514	-4.592	-8.101	-5.080	-4.936	-6.954
	(0.706)	(0.747)	(0.660)	(0.718)	(0.740)	(0.794)
BMY	-	5.542	-	-	-	12.160
		(0.882)				(0.770)
ER	-	-	-0.051	-	-	-0.042
			(0.810)			(0.891)
IR	-	-	-	-0.069	-	-0.071
				(0.597)		(0.624)
OPEN	-	-	-	-	1.954	-6.373
					(0.970)	(0.928)
Wald test	1.894	2.416	2.076	1.498	3.200	2.553
df	3	4	4	4	4	7
Sargant test	27.057	27.282	26.713	17.361	19.521	9.651
df	19	18	18	18	18	15
No of countries:	7					
Observation:	119					
Sample period:	1972-1996					

- * significant at 10%, ** significant at 5%
- values in parentheses are p-values

BIY_0 is initial level of the share of internal finance (at 1972), the rest of the variables are as defined in Table 1.

Table 4 GMM estimation results for the dynamic fixed effects model
Dependent variable: Growth of internal finance (IFG)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-1.401	-2.806	-1.436	-1.195	-0.896	-1.913
	(0.114)	(0.073)	(0.120)	(0.265)	(0.410)	(0.361)
IFG(-1)	-0.103	-0.092	-0.096	-0.100	-0.053	-0.058
	(0.564)	(0.632)	(0.603)	(0.622)	(0.782)	(0.797)
IFG(-2)	-0.148	-0.157	-0.148	-0.153	-0.130	-0.143
	(0.191)	(0.194)	(0.190)	(0.234)	(0.272)	(0.300)
IFYo	-2.124*	-3.112*	-2.154*	-1.917	-2.376*	-2.975
	(0.092)	(0.053)	(0.093)	(0.195)	(0.074)	(0.111)
BMY	-	1.130	-	-	-	1.000
		(0.258)				(0.376)
ER			0.001	-	-	-0.001
			(0.889)			(0.817)
IR				-0.003	-	-0.003
				(0.579)		(0.627)
OPEN					-1.318	-1.216
					(0.395)	(0.524)
Wald test	3.549	4.379	3.558	3.067	4.083	4.159
df	3	4	4	4	4	7
Sargant test	39.327	33.096	39.303	30.278	36.522	26.216
df	19	18	18	18	18	15
No of countries:	7					
Observation:	119					
Sample period:	1972-1996					

- * significant at 10%, ** significant at 5%
- values in parentheses are p-values

IFY_0 is the initial level of the share of internal finance (at 1972), the rest of the variables are as defined in Table 1.

Although the results for all the six model variants show the expected negative sign on the initial level of bank productivity (at 1972), tied down by variable *BIY*, there is hardly any statistically significant estimates. Hence we cannot regard the results as providing reliable (significant) evidence that the EU member countries are converging towards a bond (capital market oriented) system, in the context of an increase in the relative share of the bond market in the overall financing of investment by NFCs. These results hold irrespective of whether we test for unconditional convergence or whether we condition banking system convergence on a number of key policy variables namely the financial deepening variable, the nominal exchange rate, the nominal interest rate and a measure of the degree of openness. The results also suggest that the nominal exchange rate and the interest rate are not potent monetary policy instruments in facilitating the convergence of the corporate bond market in the seven EU member countries. However, as noted previously the formation of "Euroland" can be expected to accelerate the growth of the Euro-dominated corporate bond market if the US is any guide; this is consistent with the weak (statistically insignificant but with expected sign) results we report in Table 3 above.

Table 4 reports the evidence on the internal finance dimension. The results suggest that there has been a tendency towards convergence among the EU member countries in terms of the use of internal finance by NFCs. It would appear that over time and across the seven countries the NFCs have shifted towards the use of internal funds (e.g. retained earnings) for financing new investment. This evidence is consistent with the pecking order theory of financing choices. The results for all the six model variants show the expected negative sign on the initial level of internal finance (at 1972), tied down by variable *IFY*; all the estimates are statistically significant except those in models 4 and 6. These exceptions show that the EU member countries do not exhibit convergence, in the context of increasing the use of internal finance in the overall financing of new investment by NFCs, if convergence is conditional to interest rate policy or to a combination of financial deepening, exchange rate policy, interest rate policy and trade liberalisation. The implication is that these monetary policy instruments encourage the opening up of the banking system, the equity market and the bond markets, making it less necessary for NFCs to sustain their first recourse to internal finance. As we would expect, if the banking system and the capital (including bond and equity) markets are efficient, the pecking order theory breaks down.

The evidence on convergence with respect to internal finance is consistent with the results obtained by Corbett and Jenkinson (1994), Bertero (1994) and Edwards and Fischer (1994) who find that high levels of internal financing are confirmed for the UK and Germany, particularly in the net figures and after noting that capital transfers can be regarded as internal sources for publicly owned corporations in Germany. These studies also find that in the Spanish case, perhaps surprisingly given the relatively early stage of financial sector restructuring in that country, internal financing counts for a very high level (over 100% in the 1980s) of investment financing while, in net terms, bank financing and, in the 1990s, equity financing, make a negative contribution.

In general, as they participate in a single market inaugurated in 1993 and following the recent restructuring of their banking systems, EU member countries may expect convergence of the financial systems on the prevailing "Continental" European model. This model depicts heavy reliance on internal financing with bank intermediated lending decreasing in importance and increasingly competing with direct financing via equity and bond markets (especially the Euro-note and bond markets) in the declining market for the external financing of investment. This might be the main plausible interpretation of the evidence obtained in this study. We find that there is a shift towards convergence, conditional as well as unconditional, with respect to equity financing and internal financing of NFCs in seven EU member countries; however, the shift is less pronounced with respect to bond issues, while there is hardly any convergence at all with respect to bank debt (or the banking system). However, a great leap forward is expected in the development of the corporate bond market following the adoption of the Euro; further undermining the dominance of bank debt finance and leading to convergence on the US financial system where the corporate bond markets are much more developed. However, in some countries, the banks are progressively diversifying into the provision of underwriting and broking (of financial instruments) services to the NFCs who previously borrowed from them more heavily via bank loans. Perhaps, the results of this study may be interpreted to suggest that the "Continental European Universal Banking" model, in the sense of banks combining lending and securities business, is becoming relevant for the EU. There is also an indication that as equity and bond finance grows in importance, and as the US relaxes laws preventing the formation of Universal Banking and bancassurance, a process of convergence between the emerging EU system and the evolving US system seems to be underway.

It is debatable whether business cycle swings have significantly influenced the convergence in the EU financial system, in terms of the choice between internal and external financing by NFCs. No attempt has therefore been made in this study to control for the separate cyclical swings in each country. Moreover, cycles affecting each country are far from being perfectly synchronised.

4. Summary and Conclusion

This paper first notes that following the EU single market launched in 1993, and the recent restructuring of banking systems by some EU countries, convergence of the financial systems in the EU is expected to occur towards either the Anglo-Saxon model or the Continental model. Specifically, however, it is argued that convergence will only occur in terms of the methods by which NFCs raise investment finance. The paper therefore proposes and implements some novel applications of econometric tests for convergence (hitherto popularised in the economic growth literature) to determine whether there has been a shift towards convergence in terms of bank debt, equity finance, bond issues and internal finance. Models are specified for each of the four elements of the capital structure of NFCs, and are estimated and tested using data from the OECD flow of funds tables for the period 1972-1996 for seven EU member countries: Finland, France, Germany, The Netherlands, Spain, Sweden and the UK.

The paper uncovers a number of interesting findings. First, there is no significant evidence of a tendency towards convergence among the EU member countries in terms of the use of bank debt by NFCs. Thus, contrary to the expectations of many policy makers and media pundits, it would appear that over time and across the seven countries the NFCs have not shifted towards the use of bank debt for financing new investment. Nor is there reliable evidence that the EU member countries are converging towards a bank oriented system, in the context of an increase in the relative share of the banking system in the overall financing of new investment by NFCs. These results seem to be impervious to a monetary policy stance involving exchange rate or interest rate instruments. Second, it is found that there has been a tendency towards convergence among the EU member countries in terms of the use of equity finance by NFCs. Over time and across the seven EU member countries the NFCs have shifted towards the use of equity finance for new investment; the equity finance has also increasingly become important as a means of funding new investment by NFCs. It would therefore appear that the EU member

countries are converging towards a more capital market oriented financial system. Third, we find that there is no reliable (significant) evidence that the EU member countries are converging towards a bond (capital market oriented) system, in the context of an increase in the relative share of the bond market in the overall financing of new investment by NFCs. This development may well be stimulated by the adoption of a single currency, however. Fourth, we find that over time and across the seven countries the NFCs have converged in terms of the use of internal funds (e.g. retained earnings) for financing new investment. This evidence is consistent with the pecking order theory of financing choices, and with the results obtained in earlier studies by Corbett and Jenkinson (1994), Bertero (1994) and Edwards and Fischer (1994) who found high and increasing levels of internal financing in most of the OECD countries (particularly evident in the UK and Germany).

In general, however, the evidence suggest some form of overall convergence of the EU financial systems on a variant of the Anglo-Saxon model, depicting heavy reliance on internal financing with bank intermediated lending decreasing in importance but increasingly competing with direct financing via equity and bond markets in the declining market for the external financing of investment.

Notes

1. The “pecking order theory of financing choices” is discussed in standard Corporate Finance textbooks e.g. Brealey and Myers (1996, p. 498-503).
2. Securitisation has involved two key processes: disintermediation (a switch from indirect (bank intermediated, loan) financing to direct financing using marketable securities); and the process of making loans tradable using (loan) asset backed securities, thereby facilitating asset management by banks.
3. The aggregate flow of funds (sources and uses) data is mainly taken from the "OECD Financial Accounts" (Part 2 of "OECD Financial Statistics") Table 33F for Non Financial Corporation (NFCs). Some items of data for the UK were not available in the OECD tables and had to be taken from the CSO publication "Financial Statistics", Table 8.2 (Sources and Uses of Capital Funds of Industrial and Commercial Companies). The definition of NFCs varies somewhat between countries.

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