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DO BANK PROFITS CONVERGE?

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Abstract

This paper examines the determinants and convergence of bank profitability in eight European Union member countries, between 1992 and 2007, using a dynamic panel model. There is evidence of persistence of abnormal bank profit from one year to the next. Average profitability was higher in banks that are strongly capitalised, efficient and diversified. The persistence of EU bank profit was lower in 1999-2007 than it was in 1992-98 in six of the eight countries. This suggests there has been an increase in the intensity of competition and speed of convergence of profits towards their long-run equilibrium values. These developments are attributed to improvements in the integration of financial markets within the EU, following the introduction of the euro in 1999, and the implementation of the Financial Services Action Plan.

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Do bank profits converge?

1. Introduction

Since the passing of the First Banking Co-ordination Directive in 1977, EU legislation has been directed consistently towards creating an integrated and competitive European banking system by reducing entry barriers and promoting cross-border business. The 1988 Second Banking Co-ordination Directive sought to enhance competition by establishing EU-wide recognition of single banking licences ("passports"). In addition, the 1988 Directive permitted banks to operate as universal banks enabling them to engage in activities other than deposit-taking and lending, including insurance, securities business, factoring and so on. Subsequently, liberalization of financial markets has enabled non-bank financial intermediaries to offer EU-wide financial services. Insurance companies and investment firms were granted single EU "passports" with mutual recognition, through Directives enacted in the early 1990s. Other major EU regulatory developments that have influenced the competitive environment under which EU banks and other financial firms operate include: the 1985 White Paper on the Completion of the Internal Market; the 1986 Single European Act; the 1992 Maastricht Treaty (which consolidated the Single Market program); the introduction of the Euro in 1999; and the adoption of the Financial Services Action Plan (FSAP) between 1999 and 2004.

The Financial Services Action Plan (FSAP) aimed to promote a more competitive and dynamic financial services industry with improved regulation. The FSAP specified measures to achieve three strategic objectives: 1) establishing a single market in wholesale financial services; 2) making retail markets more open and secure; and 3) strengthening the rules on prudential supervision. A range of other regulatory actions focused on harmonizing the fiscal treatment of financial services. By the start of 2005, 38 of the original 42 measures outlined in the FSAP had been implemented and were incorporated into EU law.

Most recently, the EU White Paper on Financial Services Policy (2005-2010) has emphasised that competition is crucial to removing the remaining barriers to a Single Market in financial services. The deregulation of financial systems that has taken place up

until the credit-crisis of mid-2007 has reduced or eliminated many of the lines of demarcation between banks and other financial service providers, and has helped facilitate both domestic and cross-border competition.

Despite these developments, however, by the end of the 2000s there were still barriers to the creation of a fully integrated European Single Market in banking and financial services (ECB, 2007, 2008, 2009; Casu and Girardone, 2009a,b; Affinito, and Farabullini, 2009; Martin-Oliver et al., 2007; Evans et al, 2008, Gropp and Kashyap, 2009). Barriers to integration include issues of consumer trust and confidence (causing depositors to prefer local or national banks to foreign banks); local bank's access to private information about borrower's creditworthiness (creating rents, particularly in small business lending, where foreign banks typically do not have access); and the bundling of financial services (enabling banks to charge different prices for each component of the bundle in different markets) (Barros et al., 2005; Dermine, 2006; Molyneux and Wilson, 2007; Goddard et al., 2007, 2009a). Most recently, the wide range of banking sector support provided by EU governments for their troubled systems (primarily post-Lehman collapse in September 2008) has raised questions about the stalling of banking sector competition throughout Europe (Goddard et al., 2009b).

While there is a general view that competition in EU banking has increased over the last decade or so, this does not appear to be reflected in any trend towards profits convergence across the region. In practice, the profitability of banks varies widely between countries. For example, German banks recorded low average profitability during the early and mid-2000s; while banks in Belgium, Sweden and UK recorded high average profitability[2] variation by country in average profitability has been attributed to factors such as the intensity of competition in specific product segments; the extent of product and geographic diversification; the degree of strategic focus on shareholder value creation; and the business cycle (Llewellyn, 2005; Casu and Girardone, 2006; Carbo and Rodriguez, 2007).

[2] The average ROE recorded by German banks over the period 200-2006 was equal to 3.7%. Corresponding ROE averages for Belgium, Sweden and the UK were 16.4%, 16.0% and 15.3% respectively. For a detailed overview of the evolution of bank profitability across EU15 countries in the 1990s and 2000s see Goddard et al (2009a).

This paper reports an empirical analysis of the determinants of profitability for banks located in eight EU member countries, using data for the period 1992-2007. All estimations are also carried out using data for two sub-periods: (i) 1992-98, the period immediately following the creation of the Single Market, and prior to the introduction of the single currency and the implementation of the FSAP; and (ii) 1999-2007, the period immediately following the introduction of the single currency and the implementation of the FSAP. The persistence of EU bank profits was lower in 1999-2007 than in 1992-98 in six of the eight countries. This suggests that (up to the crisis at least) there has been an increase in the intensity of competition and speed of convergence of profits towards their long-run equilibrium values. Average profitability was higher for banks that were strongly capitalised, efficient and diversified. These results should be of interest to policy makers and government agencies monitoring competition and financial market integration.

The remainder of this paper is structured as follows. Section 2 reviews relevant literature on the determinants of bank performance. Section 3 describes the specification of the empirical model and in Section 4 describes the data and results are presented. Section 5 summarizes and concludes.

2. Literature

There is a long tradition of empirical research on the determinants of bank performance, beginning with studies informed by the Structure-Conduct-Performance (SCP) paradigm and the views of the revisionist Chicago School on the empirical relationship between concentration and profitability. According to the SCP paradigm, a small number of banks may be able to collude either implicitly or explicitly, or exploit their market power independently, to charge higher prices (lower rates paid on deposits, higher rates charged on loans and fees) and earn abnormal profits. The Chicago School argued that evidence of a positive concentration-profitability relationship does not necessarily reflect an abuse of market power. It may simply arise from a relationship between size and efficiency: larger banks benefit from economies of scale or x-efficiency advantages; therefore more highly concentrated markets are inherently more profitable. Most studies based on US and European data find evidence of an association between concentration and

profitability. However, the question as to whether this relationship reflects collusion or efficiency factors has never been satisfactorily resolved (Molyneux and Thornton, 1992; Berger, 1995a; Goddard et al, 2001, 2007; Casu and Girardone, 2006; Dick and Hannan, 2009).[3]

Empirical research on the effects of competition on bank performance often uses observable industry structure indicators (such as concentration ratios or Herfindahl indices) to measure the degree of competition, but without any guarantee that the observed values of such measures represent the market equilibria that are the focus of the corresponding theory. Contestable markets theory, and its new empirical industrial organisation (NEIO) counterpart, emphasises the influence of potential as well as actual competition on profitability. Potential competition depends largely on the size of entry barriers, and is not directly observable (Baumol et al., 1982; Panzar and Rosse, 1987; Molyneux et al., 1994, DeBandt and Davis, 2000; Goddard and Wilson, 2009).

Entry and exit barriers also motivate persistence of profit (POP) models of the dynamics of profitability, which recognize the possibility that markets are out of equilibrium at the moment when the data are observed. The POP hypothesis, developed and operationalized by Mueller (1977, 1986), is that entry and exit are sufficiently free to eliminate any abnormal profit quickly, and that all firms' profit rates tend to converge towards the same long-run average value. The alternative is that some incumbent firms possess the capability to prevent imitation, or retard or block entry. If so, abnormal profit tends to persist from year to year, and differences in firm-level long-run average profit rates may be sustained indefinitely. The degree of first-order serial correlation in firm- or industry-level time-series profit data provides an indication of the speed at which

[3] The four hypotheses tested with respect to the link between market structure and performance are: (1) the structure-conduct-performance hypothesis (SCP), that banks in more concentrated markets may exploit their market power to charge higher prices; (2) the relative-market-power hypothesis (RMP), that only firms with large market shares and differentiated products are able to exercise market power; (3) the x-efficiency version of the efficient-structure hypothesis (ESX), that firms with superior management or production technologies have lower costs and higher profits; (4) the scale-efficiency version of the efficient-structure hypothesis (ESS), that firms producing at more efficient scales have lower unit costs and higher unit profits. The ESS hypothesis has spawned a large empirical literature. The early literature was concerned with identifying the potential for achieving cost savings by exploiting economies of scale and scope; and by maximising operational or productive efficiency. A widely reported empirical regularity is that the potential for achieving average cost savings by reducing or eliminating operational inefficiencies is greater than the potential for doing so by realising economies of scale. The term 'quiet life hypothesis' has been coined by Berger and Hannan (1998) to describe the notion that market power might have a detrimental impact on operational efficiency. In recent empirical research using on European data, Casu and Girardone (2006) fail to find evidence of any straightforward relationship between competition and efficiency.

competition causes above- or below-average profits in one year to converge subsequently towards long-run equilibrium values.

There is an extensive empirical POP literature based on manufacturing data, but only a handful of studies investigate POP in banking.[4] Barriers to competition and information failures influence the degree of persistence (Levonian, 1993; Roland, 1997; Berger et al, 2000; Goddard et al., 2004a,b). Recently, Carbo and Fernandez (2007) have reported evidence of persistence in bank spreads in Europe. Overall, the persistence in profit is an overlooked topic in the empirical literature on bank competition. This paper formulates a dynamic model of the determinants of bank profitability, incorporating both a persistence of profit component, and a number of other covariates that are expected to influence equilibrium profit rates. This model specification permits an assessment of the extent to which bank- and industry-level characteristics drive banks profits, and the extent to which profits converge towards their long-run equilibrium values.

3. Specification of the empirical model

The following specification is used for the estimable model:

$$\pi_{i,t} = \alpha_i + \lambda\pi_{i,t-1} + \beta_1 x_{i,t} + \beta_2 m_t + \nu_{it} \qquad (1)$$

where $\pi_{i,t}$ denotes the profit rate of bank i in year t; $x_{i,t}$ denotes a vector of exogenous bank-specific variables; m_t denotes a vector of country-specific variables; α_i is an individual effect for bank i; λ is a coefficient; β_1 and β_2 are vectors of coefficients; and $v_{i,t}$ is a random disturbance.

The motivation for the specification of a dynamic profit equation containing a partial-adjustment mechanism (lagged dependent variable) is drawn from the persistence of profit literature. Abnormal profit arises either through the exploitation of market power by incumbent banks, or because incumbents are more efficient or innovative in the production or distribution of financial services. Over time, entry stimulates competition which eventually eliminates any abnormal profit, either by undercutting prices, or

[4] For tests of the persistence of profit hypothesis for manufacturing and services firms and industries, see Mueller (1986), Geroski and Jacquemin (1988), Waring (1996), Goddard and Wilson (1996, 1999), McGahan and Porter (1999), Glen et al. (2001, 2003), and Marayuma and Odagiri (2002).

through imitation. However, potential entry and imitation are unobservable; therefore, some means of approximating their effects is required in order to model the competitive process.

The change in bank i's profit rate, denoted $\Delta\pi_{i,t}$, is assumed to be a function of the lagged profit rate (to ensure that profit rates are stationary) denoted $\pi_{i,t-1}$, current and past entry denoted E_{t-j}, and 'luck' denoted $u_{i,t}$:

$$\Delta\pi_{i,t} = \theta_{i,t} + \sum_{j=0}^{\infty}\beta_j E_{t-j} + \gamma\pi_{i,t-1} + u_{i,t} \tag{2}$$

Entry is a function of past realizations of bank i's profit rate:

$$E_t = \phi_{0,t} + \sum_{j=1}^{\infty}\phi_j \pi_{i,t-j} + e_t \tag{3}$$

Substituting (3) into (2) and reparameterizing yields an autoregressive model for the profit rate:

$$\pi_{i,t} = (1-\sum_{j=1}^{\infty}\lambda_j)\tilde{\pi}_{i,t} + \sum_{j=1}^{\infty}\lambda_j\pi_{i,t-j} + \nu_{i,t} \tag{4}$$

where $\tilde{\pi}_{i,t}$ is bank i's equilibrium profit rate, assumed to be variable over time. In practice, it is common to estimate a first-order autoregressive (AR(1)) specification for $\pi_{i,t}$, with the higher-order lagged profit rates in (4) suppressed:

$$\pi_{i,t} = (1-\lambda_1)\tilde{\pi}_{i,t} + \lambda_1\pi_{i,t-1} + \nu_{i,t} \tag{5}$$

Equivalence between (5) and (1) is established by assuming $\tilde{\pi}_{i,t}$ is a linear function of $x_{i,t}$ and m_t, as follows:

$$\tilde{\pi}_{i,t} = (\alpha_i + \beta_1 x_{i,t} + \beta_2 m_t)/(1-\lambda_1) \tag{6}$$

The dependent variables in the empirical model, henceforth denoted PROF = $\pi_{i,t}$ in (1), are two commonly used profitability measures: return on average equity (ROE) and return on average assets (ROA). To make the analysis comparable with previous studies, ROE is defined as the ratio of net income after tax to average equity; and ROA is the ratio of net income after tax to average assets. Tax is deducted because if effective tax rates differ across countries, entrants should make their entry decisions based on after-tax profits. In order to eliminate the effect of cyclical fluctuations which impact similarly on

the profit rates of all banks within each country, PROF is expressed as a deviation from the cross-sectional mean profit rate in year t. Therefore PROF is the normalized profit rate of bank i in year t.[5]

The covariate PROF(-1) = $\pi_{i,t-1}$ in (1), is the lagged dependent variable. In accordance with the persistence of profit literature, the coefficient on the lagged dependent variable in a profit rate regression measures the speed at which short-run profits converge towards their long-run equilibrium values. This coefficient is interpreted as an estimate of the effectiveness of competitive forces emanating from entry and exit in eliminating positions of above- or below-average profitability.

The exogenous covariates that comprise the vectors $x_{i,t}$ and m_t in (1) are defined as follows:

MS = market share, defined as the share of the bank's assets as a percentage of the total banking sector assets in country j.

DIV = ratio of non-interest income to total operating income.

KA = capital ratio, defined as the ratio of equity to total assets.

LA = ratio of net loans to total assets.

CI = cost-to-income ratio, defined as the ratio of total operating cost to total income.

HH = Herfindahl-Hirschman concentration index, defined as the sum of the squared market shares of all banks.

SAV = 1 for savings banks, 0 for all others.

COOP = 1 for cooperative banks, 0 for all others.

A bank with a large market share (MS) is expected to be more profitable than its smaller counterparts. Among the four hypotheses related to the profit-structure relationship in banking (see endnote 2), Berger (1995a) finds support for the relative market power hypothesis, which asserts that only firms with large market shares and highly differentiated products are able to exercise market power in pricing these products and earn supernormal profits. Either a positive or a negative relationship between market share and profitability might be expected. On the one hand, small banks normally extend

[5] Biases could arise from the use of accounting rates of return rather than economic profits. However, according to Geroski and Jacquemin (1988), persistently high accounting rates of return indicate persistently high economic rates of return.

credit to more risky customers and charge a higher risk premium, reflected by a higher interest-rate margin, which could feed through to higher revenues and profits. To the extent that market shares translate into market power, banks with larger shares may be able to charge higher rates on loans. In addition, larger banks may be able to realize economies of scale and other efficiency savings, reducing costs and leading to higher profits (Martinez-Peria and Mody, 2004).

In recent years, deregulation and technological innovation has permitted many banks to capture an increasing proportion of their income from non-interest sources. While part of the increase in non-interest income is due to diversification into areas such as investment banking, asset management and insurance underwriting; growth in fee-paying and commission-paying services linked to traditional retail banking services has also been significant. For banks, both in the US and elsewhere, DeYoung and Rice (2004), Stiroh and Rumble (2006), Carbo-Valverde and Fernandez (2007), Laeven and Levine (2007), Mercieca et al. (2007 and Lepetit et al. (2008) have examined the relationships between non-interest income and business strategies, market conditions, technological change and risk-adjusted financial performance. Generally, the shift towards non-interest income has not improved risk-adjusted returns because retail banking offers relatively stable returns that tend to offset higher volatility in non-retail returns. Therefore we have no specific prior as to the direction of the relationship between diversification (DIV) and profitability.

An excessively high capital-assets ratio (KA) could signify that a bank is operating over-cautiously and ignoring profitable investment opportunities. On the other hand, the cost of insurance against bankruptcy may be high for a bank with a low capital-assets ratio, suggesting a positive association between the capital-assets ratio and performance (Berger, 1995b). Alternatively, according to the signalling hypothesis, managers may have both private information as to the financial institution's future performance, and a stake in the institution's value through a personal shareholding. It may be less costly for managers of low risk institutions to signal quality by maintaining a high capital-assets ratio than for managers of high risk institutions (Hughes and Mester, 1998). Again, we have no specific prior as to the direction of the relationship between the capital-assets ratio (KA) and profitability.

The loans-to-assets ratio (LA) has been used as both a measure of credit risk and of lending specialisation in empirical studies of banking. Loans are typically less liquid and more risky than many other assets in a bank's portfolio. The risk of default, and the additional costs incurred in managing credit risk, requires banks to apply a risk premium to the interest rate charged for the loan. Banks with a relatively high LA may be at greater risk of failure. However, if LA is interpreted as measure of lending specialization, a high LA might indicate that a bank specializes in lending due to informational advantages, which may reduce intermediation costs and enhance profitability (Freixas, 2005). According to Degryse and Ongena (2006), switching costs for customers are an important source of rents for banks, and an important motive for the development of relationship (as opposed to transaction) banking. Switching costs include search costs and shoe-leather costs (the time and effort required to open a new account, transfer the funds and close the old account), and informational costs arising from the private information that is available to the borrower's current bank, but unavailable to competing banks.

Efficiency in delivering banking services is an important determinant of the profitability of banks. The cost-income ratio, denoted CI, is included as a covariate as a proxy for efficiency. A reduction in a bank's cost-income ratio, driven by improved managerial efficiency, is expected to increase profitability. However, if the benefits of improved operational efficiency are passed on to customers in the form of lower loan rates and/or higher deposit rates, then increased profitability may fail to materialize.

The Herfindahl-Hirschman Index, denoted $HH = \sum_{i=1}^{N} s_i^2$, where s_i is the market share of bank i, and N is the number of banks, is a standard market concentration measure. According to the collusion hypothesis (see Section 2), there is causal link between concentration and profitability. According to the efficiency hypothesis, any statistical association between concentration and profitability does not reflect a causal relationship.

In several European countries, private and mutual (savings and cooperative) banks operate alongside commercial banks in a competitive market. Since the former pursue social and economic development objectives (and may be subject to a lack of capital market discipline) their performance might be expected to differ from that of profit-maximising

privately-owned commercial banks (Altunbas et al., 2001; Beck et al., 2009). In addition, savings and co-operative banks typically focus on retail and SME customers. The covariates SAV and COOP are 0-1 dummy variables which identify savings and cooperative banks, respectively.

4. Data, estimation method, and empirical results

Unconsolidated accounts data for banks operating in eight countries that were EU members in 1992 (Belgium, Denmark, France, Germany, Italy, Netherlands, Spain and the UK) are obtained from *Bankscope*. The sample includes all commercial, savings and cooperative banks from any of these eight countries for which consistent and reliable data for the period 1992-2007 are available.[6] The final sample is an unbalanced panel with 34,465 bank-year observations on 5,000 banks.

The empirical model is estimated for each of the eight sample countries individually. Each estimation is carried out using data for the entire sample period (1992-2007), and for two sub-periods (1992-98, and 1999-2007). The latter estimations enable comparisons to be drawn between the sub-periods before and after the introduction of the euro and the implementation of the Financial Services Action Plan (FSAP).

Table 1 reports descriptive statistics for the ROE and ROA dependent variables, by country. Summary statistics are reported for all countries for the period 1992-2007, and for the sub-periods 1992-98 and 1999-2007. Banks in Spain and Denmark report the highest average ROE, both for the entire sample period and for the two sub-periods, while Dutch banks report the lowest average ROE. Banks in Denmark and Italy report the highest average ROA, while German banks report the lowest.

Table 2 reports descriptive statistics for ROE and ROA by ownership type (commercial, savings and cooperative banks). Savings banks have slightly higher average ROE (7.71%) than commercial banks (7.68%), which is then higher than cooperative banks (6.98%). Savings and cooperative banks in France, Germany, Italy and Spain report higher

[6] Banks reporting extreme values (larger than 95 percentile or smaller than 5 percentile of the sample of each country), or very large unexplained changes in the values of any of the variables, were excluded. Banks from four 1992 EU member states, Greece, Ireland, Luxembourg, and Portugal, were excluded, because insufficient data were available for use of the system GMM estimator.

average ROE than commercial banks. However, the same pattern is not apparent for ROA. Cooperative banks report the highest average ROA (0.72%) among different types of banks, while savings banks report the lowest (0.60%), which is significantly influenced by the low ROA for Germany (0.29%). In Denmark, Italy and Spain, savings and cooperative banks report higher average ROA than commercial banks.

Table 3 reports descriptive statistics for the other covariates in the model. Diversification into non-interest sources of income (DIV) was higher in 1999-2007 than in 1992-98 in all countries. British banks were most heavily reliant on non-interest income, with an average ratio of 38% for the entire sample period. French banks reported the second-highest average ratio of 35.3%. The Dutch banks appeared to be the least diversified into non-interest sources of income (19.3%). The average capital ratio was higher in 1999-2007 than in 1992-98 in all countries except Denmark and the Netherlands. For the entire sample period, British banks reported the highest average capital ratio of 16.4%, and German banks reported the lowest average value of 5.7%. The loan-to-assets ratio (LA) was higher in 1999-2007 than in 1992-98 in all countries except the Netherlands. German banks seemed to rely heavily on traditional lending business, with overall 59% net loan to total assets ratios, while in the UK, banks tended to diversify their businesses and therefore have only 29% loan ratio. The cost-to-income ratio (CI) did not appear to be consistently higher in 1999-2007 than in 1992-98. There is also no consistent pattern in the movement in the average market share (MS) between the two sub-periods. The Herfindahl index (HH) was also larger in 1999-2007 than in 1992-98 (except for the UK) reflecting greater industry concentration after the introduction of Euro and the implementation of the Financial Services Action Plan (FSAP).

Insert table 1 Descriptive Statistics for Profit Rates

Insert table 2 Descriptive Statistics for Profit Rates by Ownerships

Insert table 3 Descriptive Statistics for Independent Variables

Equation (1) takes the form of a linear dynamic panel regression model. Such models include one or more lags of the dependent variable as covariates and contain

unobserved individual effects (either fixed or random). By construction, the individual effects are correlated with the lagged dependent variable, rendering the standard fixed effects or random effects estimators inconsistent. Arellano and Bond (1991) developed a consistent Generalized Method of Moments (GMM) estimator for such models, known as the difference estimator. This estimator has been shown to perform poorly if the autoregressive coefficient (λ in (1)) is close to one, or if the ratio of the variance of the individual effects to the variance of idiosyncratic error is large.

Building on the work of Arellano and Bover (1995), Blundell and Bond (1998) developed a systems estimator that exploits additional moment conditions on both first-differences and levels, with lagged first-differences of the series employed as instruments in the levels equation. This estimator is designed for large N-small T panels, as in the present case. Therefore estimation of (1) is implemented using the two-step system GMM estimator with Windmeijer-corrected standard errors, including both lagged differences and levels of the explanatory variables as instruments. The system GMM estimator reduces potential biases in finite samples, and asymptotic imprecision associated with the difference estimator (Blundell and Bond, 1998).

The consistency of the system GMM estimator depends both on the validity of the assumption that the error term is not autocorrelated, and on the validity of the instruments. Two specification tests are reported. The first is a Hansen test of over-identifying restrictions, which examines the validity of the instruments by analyzing the sample analogue of the moment conditions used in the estimation procedure. The second test examines the hypothesis of no autocorrelation in the error term. The presence of first-order autocorrelation in the differenced residuals does not imply that the estimates are inconsistent, but the presence of second-order autocorrelation implies that the estimates are inconsistent. The second-order autocorrelation test is reported.[7] Table 4 presents the estimation results by country, with ROE used as the dependent variable and Table 5 corresponding results for the ROA dependent variable.

[7] The failure to pass either of the tests in a few cases suggests that these estimates are not completely free of statistical problems. However, instead of using different specifications for different countries, a consistent methodology is adopted so that the results are comparable.

Insert Table 4 Determinants of ROE in the EU: Individual Country Analysis

Insert table 5 Determinants of ROA in the EU: Individual Country Analysis

The estimated persistence coefficients on the lagged ROE or ROA dependent variables are significant in virtually all of the estimations reported in Tables 4 and 5. There are some large differences between countries in the magnitudes of these coefficients, which, in the estimations over the entire sample period, vary from 0.388 for France to 0.619 for Spain for ROE; and from 0.246 for Germany to 0.703 for the UK for ROA.

In the estimations for the two sub-periods, the persistence coefficients on the lagged ROE dependent variable are lower for 1999-2007 than they are for 1992-98 in all the sample countries. For the ROA dependent variable, the persistence coefficients are lower for 1999-2007 than they are for 1992-98 in the cases of France, Germany, Italy, the Netherlands, Spain and the UK. These results suggest an overall decrease in the persistence of profit between the two sub-periods, suggesting an increase in the intensity of competition.

Overall, these coefficient estimates suggest that while there is significant persistence of profit from one year to the next in all sample countries, the intensity of competition and the speed at which profits converge towards their equilibrium values have increased. On this measure, policies such as the introduction of the single currency and the adoption of the FSAP appear to have achieved some success in increasing integration and promoting competition in the banking industry. While these findings are encouraging, however, some obstacles to rapid convergence remain. At the time of writing, amidst a global financial crisis with governments prioritising stability over competition, this finding may cause pause for thought. Such policies are likely to introduce new barriers to competition in banking and reduce the pace of integration.[8]

The coefficients on DIV are positive and significant in most of the estimations. This suggests that banks that focused on non-traditional lines of business were more profitable. Such a relationship might be driven by synergies between core and related activities,

[8] Goddard et al. (2009b) discuss the causes, consequences and policy responses to the credit crisis from a European perspective.

allowing diversified banks to gain and maintain competitive advantage over their less diversified counterparts. The positive relationship between diversification and performance appears to become stronger since the introduction of the euro and the adoption of the FSAP in 1999. This may explain the differences between the present results (empirical methodology notwithstanding) and those of Mercieca et al (2007), who report negative returns to diversification for small European banks.

The relationship between KA and profitability differs between the estimations using ROE and ROA as the profitability measure. In Table 4 the coefficient estimates are negative and significant for most countries using the ROE measure, and in Table 5 are positive and significant using the ROA measure. If KA provides an accurate reflection of a bank's risk profile, a positive empirical relationship between KA and profitability is surprising, although similar to results for the US reported by Berger (1995b). Berger's explanations for a positive relationship between KA and profitability (see Section 3) may be applicable in the present case.

There is evidence (for France, Italy and Spain) that banks that dedicate a higher proportion of their balance sheets to lending activity have higher profitability. Due to the heavy presence of savings and cooperative banks in these countries, traditional lending business is the main source of income (see Table 3). Lending provides informational advantages, which may lower intermediation costs and improve performance.[9] This does not appear to be the case for banks in the UK, where a higher ratio of loans to total assets may effectively reduce profitability.[10]

The relationship between CI and profitability is negative and significant in all of the estimations. This result is consistent with much of the previous empirical banking literature, which suggests that efficiency is a more important determinant of profitability than either concentration or the market shares of individual banks.

[9] This result does not necessarily conflict with previous finding that more diversified banks have higher profitability, since banks diversify their income sources through investment banking, securitization, fee generating and other types, which do not necessarily take away assets from loan portfolios. Hence, high lending ratio does not necessarily mean low diversification ratio.

[10] This finding is consistent with what we find in the descriptive statistics (Table 3) that British banks are the most diversified banks into non-interest sources of income with the lowest net loan to total assets ratio among all the sample countries. Hence, British banks may rely more on non-interest income rather than traditional interest income than the rest of the sample countries. Consequently, an increase in loan portfolio proportion may indeed dampen the overall profitability.

The signs of the coefficients on MS are conflicting across countries and sub-periods. They are positive and significant for Belgium and Spain. This supports the view that banks with higher market share exert market power to enhance their profitability. In Italy, Denmark, France and the UK, however, banks with smaller market shares were more profitable than those with larger market shares.

Concentration, measured using the Herfindahl Index (HH), is significant in many of the estimations. However, the direction of the relationship between HH and profitability is not consistent between countries. If we only look at the whole sample period, a positive relationship is obtained for France, Germany, Italy, and Spain; and a negative relationship is obtained for the Netherlands.

Finally, the coefficients on the bank ownership type dummy variables indicate that cooperative banks were more profitable than commercial banks in Belgium, Germany and Italy. Savings banks were less profitable than commercial banks in Denmark, but more profitable in Spain.

5. Summary

This paper has reported dynamic panel estimations of a model designed to identify selected determinants and persistence of profitability in eight major European banking sectors: Belgium, Denmark, France, Germany, Italy, Netherlands, Spain and the United Kingdom (UK), for the period 1992-2007. The results of estimations suggest that there is significant persistence of profit from one year to the next. If a bank earns an abnormal profit in the current year, its expected profit for the following year includes a sizeable proportion of the current year's abnormal profit. Although competition is effective in eliminating abnormal profit eventually, the speed at which profits converge is by no means instantaneous. There is also some variation between countries in the effectiveness of competition in eliminating abnormal profits. Separate estimations for the sub-periods before (1992-98) and after the introduction of the euro and the implementation of the Financial Services Action Plan (1999-2007) suggest that the persistence of profit has fallen in the majority of the eight countries. This finding is consistent with an increase in the intensity of competition in the banking sector having taken place after 1999.

Overall, we find strong evidence across our sample countries that more highly diversified banks outperformed their focused counterparts. Significantly positive relationships between LA and profitability are found for France, Italy and Spain when ROA is used as profitability measure, suggesting that a higher ratio of loans to total assets may effectively enhance profitability through the development of long-lasting credit relationships. There is also evidence that efficient banks are more profitable than their inefficient counterparts. This finding is consistent with previous literature that suggests efficiency is a more important determinant of performance than either concentration or the market shares of individual banks. The positive relationship between the capital ratio and ROA may indicate that managers use capital strength as a signal for expected future profitability. The negative relationship between the capital ratio and ROE may indicate that the opportunity costs of holding high levels of capital tend to reduce shareholder returns. The evidence of any systematic relationship between concentration and bank market share is unconvincing.

Policy actions at the EU level, including the introduction of the euro and the implementation of the FSAP, appear to have increased the intensity of competition as measured by the speed at which convergence towards long-run average profitability is achieved. However, there is a current danger that improvements in the competitiveness and integration of financial markets might be placed in jeopardy or reversed in the near future, if policy measures to deal with the credit crisis prioritize stability over competition, and introduce new barriers to competition by insulating incumbent banks from rivalry.

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Table 1 Descriptive Statistics for Profit Rates by Country

ROE

	1992-1998			1999-2007			1992-2007		
Country	No. of Obs	Mean	Std Dev	No. of Obs	Mean	Std Dev	No. of Obs	Mean	Std Dev
Belgium	317	7.56	6.98	208	9.43	9.67	525	8.30	8.19
Denmark	800	8.08	6.53	716	10.27	5.71	1516	9.11	6.25
France	1755	5.78	10.92	1829	9.75	8.22	3584	7.81	9.84
Germany	8395	6.52	3.13	12218	5.10	3.11	20613	5.68	3.19
Italy	2442	8.57	4.83	3351	7.16	4.05	5793	7.76	4.45
Netherlands	142	5.81	3.67	89	8.48	5.14	231	6.84	4.48
Spain	852	10.59	6.28	693	9.77	5.88	1545	10.22	6.12
UK	229	9.49	9.48	429	7.08	8.78	658	7.92	9.10

ROA

	1992-1998			1999-2007			1992-2007		
Country	No. of Obs	Mean	Std Dev	No. of Obs	Mean	Std Dev	No. of Obs	Mean	Std Dev
Belgium	312	0.46	0.57	212	0.81	0.94	524	0.60	0.76
Denmark	808	1.07	0.88	715	1.35	0.77	1523	1.20	0.84
France	1764	0.42	0.76	1840	0.75	0.67	3604	0.58	0.73
Germany	8473	0.30	0.17	12285	0.29	0.21	20758	0.29	0.20
Italy	2424	0.93	0.65	3369	0.83	0.46	5793	0.87	0.55
Netherlands	138	0.53	0.58	90	0.61	0.45	228	0.56	0.53
Spain	860	0.84	0.74	698	0.82	0.63	1558	0.83	0.69
UK	226	0.99	1.38	420	0.74	1.04	646	0.83	1.17

Notes: Profit rates (ROE and ROA) are expressed in percentages. Source: Bankscope.

Table 2 Descriptive Statistics for Profit Rates by Ownership Type

ROE

	Commercial			Savings			Cooperative		
Country	**No. of Obs**	**Mean**	**Std Dev**	**No. of Obs**	**Mean**	**Std Dev**	**No. of Obs**	**Mean**	**Std Dev**
Belgium	387	8.50	8.15	79	8.54	7.94	59	6.68	8.74
Denmark	694	11.01	6.18	710	7.93	5.72	112	4.85	6.05
France	2211	7.32	12.00	343	7.69	3.75	1030	8.89	4.64
Germany	1988	4.84	4.70	7334	5.64	3.12	11291	5.85	2.87
Italy	1039	6.38	5.21	754	6.42	3.90	4000	8.36	4.19
Netherlands	209	6.86	4.61	19	7.02	3.03	3	4.40	0.76
Spain	807	8.03	6.83	580	13.37	3.77	158	9.83	3.79
UK	638	8.01	9.12	20	5.05	8.18			
Mean	997	7.62	7.10	1230	7.71	4.93	2379	6.98	4.43

ROA

	Commercial			Savings			Cooperative		
Country	**No. of Obs**	**Mean**	**Std Dev**	**No. of Obs**	**Mean**	**Std Dev**	**No. of Obs**	**Mean**	**Std Dev**
Belgium	390	0.55	0.69	77	0.65	0.78	57	0.87	1.08
Denmark	712	1.22	0.80	714	1.21	0.85	97	0.99	1.07
France	2225	0.59	0.89	342	0.38	0.21	1037	0.64	0.38
Germany	1926	0.34	0.34	7470	0.26	0.15	11362	0.31	0.18
Italy	1083	0.56	0.51	768	0.59	0.39	3942	1.01	0.53
Netherlands	207	0.57	0.56	18	0.45	0.18	3	0.38	0.06
Spain	808	0.80	0.89	592	0.88	0.36	158	0.84	0.41
UK	626	0.84	1.18	20	0.37	0.90			
Mean	997	0.68	0.73	1250	0.60	0.48	2379	0.72	0.53

Notes: Profit rates (ROE and ROA) are in percentages. Source: Bankcope.

Table 3 Descriptive Statistics for Independent Variables

Country	DIV			KA			LA			CI			MS			HH		
	9298	9907	9207	9298	9907	9207	9298	9907	9207	9298	9907	9207	9298	9907	9207	9298	9907	9207
Belgium	27.1	36.7	30.9	8.8	11.1	9.7	34.4	35.5	34.8	72.0	70.5	71.4	2.1	2.2	2.2	1215	2498	1723
Denmark	11.4	28.1	19.3	15.2	14.1	14.7	51.8	59.2	55.3	65.5	63.9	64.8	0.5	0.9	0.7	2008	2239	2117
France	31.0	39.4	35.3	8.9	10.1	9.5	52.9	55.8	54.4	72.9	67.4	70.1	0.3	0.4	0.4	632	800	718
Germany	20.0	26.0	23.5	5.2	6.0	5.7	59.3	59.7	59.5	66.7	71.0	69.2	0.1	0.0	0.0	225	474	373
Italy	22.5	23.3	22.9	11.5	12.4	12.0	44.0	59.0	52.7	68.1	71.4	70.0	0.3	0.2	0.2	346	384	368
Netherlands	17.5	21.9	19.2	11.1	10.3	10.8	42.2	41.1	41.8	50.0	48.5	49.4	2.0	1.1	1.7	2528	2898	2670
Spain	20.9	24.8	22.6	12.4	12.6	12.5	46.6	60.6	52.8	63.1	60.1	61.7	0.9	0.9	0.9	481	800	624
UK	37.1	38.4	38.0	15.2	17.4	16.6	28.5	30.0	29.5	57.9	64.6	62.3	0.5	0.2	0.3	1693	879	1162

Notes: '9298' is the subperiod 1992-98, '9907' is the subperiod 1999-2007, and '9207' is the entire sample period 1992-2007. Table 3 reports average values. DIV = ratio of non-interest income to total operating income. LA = ratio of net loans to total assets; KA = capital ratio, defined as the ratio of equity to total assets; CI = cost-to-income ratio, defined as the ratio of total operating cost to total income; MS = market share, defined as the share of bank i's assets as a percentage of the total banking sector assets in country j; HH = Herfindahl-Hirschman concentration index, defined as the sum of the squared market shares of all banks within each country each year. .

Table 4 Determinants of ROE --- Individual Country Results

	Belgium			Denmark			France			Germany		
	9298	**9907**	**9207**	**9298**	**9907**	**9207**	**9298**	**9907**	**9207**	**9298**	**9907**	**9207**
PROF(-1)	0.460**	0.405***	0.402***	0.531**	0.245***	0.128	0.569***	0.257*	0.388***	0.570***	0.404***	0.476***
	(0.019)	(0.002)	(0.001)	(0.048)	(0.005)	(0.229)	(0.003)	(0.088)	(0.003)	(0.000)	(0.000)	(0.000)
DIV	0.069**	0.086**	0.078***	0.062**	0.132***	0.126***	0.029**	0.057***	0.042***	0.014***	0.016***	0.015***
	(0.024)	(0.048)	(0.000)	(0.025)	(0.000)	(0.000)	(0.018)	(0.003)	(0.001)	(0.003)	(0.007)	(0.001)
KA	-0.116***	-0.137	-0.127***	-0.079	-0.175***	-0.154***	-0.064**	-0.107***	-0.101***	-0.044***	-0.039***	-0.038***
	(0.000)	(0.153)	(0.000)	(0.108)	(0.002)	(0.000)	(0.022)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
LA	0.011	-0.016	0.002	0.005	0.026	0.000	-0.007	0.039***	0.010	0.001	0.000	0.001
	(0.781)	(0.756)	(0.904)	(0.728)	(0.111)	(0.992)	(0.665)	(0.004)	(0.341)	(0.669)	(0.933)	(0.581)
CI	-0.141***	-0.172***	-0.161***	-0.092*	-0.163***	-0.171***	-0.063***	-0.082***	-0.079***	-0.036***	-0.062***	-0.052***
	(0.003)	(0.003)	(0.000)	(0.056)	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
MS	0.081	0.218**	0.158**	0.153*	0.015	0.047	-0.140	0.054	-0.055	0.059	-0.050	-0.013
	(0.369)	(0.043)	(0.020)	(0.056)	(0.373)	(0.317)	(0.160)	(0.300)	(0.336)	(0.390)	(0.580)	(0.859)
HH	0.000	-0.008	-0.004	0.493	-0.004**	-0.004	-0.003	0.045***	0.041***	-0.008***	0.003***	0.003***
	(0.924)	(0.600)	(0.664)	(0.164)	(0.044)	(0.102)	(0.973)	(0.003)	(0.004)	(0.000)	(0.000)	(0.000)
SAV	1.169	2.221	0.972	-0.371	-1.516***	-1.240***	0.354	-0.094	0.140	0.596***	-0.261	0.204
	(0.186)	(0.413)	(0.203)	(0.297)	(0.003)	(0.001)	(0.435)	(0.856)	(0.709)	(0.007)	(0.335)	(0.308)
COOP	-0.809	0.394	-0.855	-0.181	-6.094	-0.084	0.969*	-1.861**	-0.115	0.316	0.385	0.502***
	(0.680)	(0.821)	(0.459)	(0.826)	(0.147)	(0.939)	(0.067)	(0.011)	(0.786)	(0.137)	(0.143)	(0.009)
_cons	8.734	32.508	21.803	-783.961	21.682***	22.760***	6.601	-40.854***	-35.288**	3.221***	0.133	-0.584
	(0.114)	(0.409)	(0.408)	(0.170)	(0.000)	(0.000)	(0.900)	(0.005)	(0.012)	(0.000)	(0.853)	(0.368)
N	241	154	395	599	666	1265	1336	1585	2921	6343	10729	17072
hansenp	0.463	1.000	1.000	0.204	0.860	0.385	0.116	0.151	0.140	0.188	0.000	0.000
ar2	0.178	0.220	0.132	0.066	0.217	0.169	0.654	0.110	0.141	0.341	0.172	0.017

Note: The two-step system GMM estimator with Windmeijer correction is used. P-values for tests of the significance of the estimated coefficients are reported in brackets. Year dummies from 1992 through 2007 are included in the model, but not reported. '9298' is subperiod 1992-98, '9907' is the subperiod 1999-2007, and '9207' is the entire sample period 1992-2007. ROE is the dependent variable.
Hansen is the p-value of the Hansen statistic of joint validity of instruments.
AR(2) is the p-value for the test of second order autocorrelation in disturbances in the first differences equation.
*, **, and *** denote coefficients that are significant at the 10%, 5% and 1% levels, respectively.

Table 4 (cont.) Determinants of ROE --- Individual Country Results

	Italy			Netherlands			Spain			UK		
	9298	**9907**	**9207**	**9298**	**9907**	**9207**	**9298**	**9907**	**9207**	**9298**	**9907**	**9207**
PROF(-1)	0.576***	0.179***	0.507***	0.471*	0.243	0.468*	0.765***	0.680***	0.619***	0.523***	0.501***	0.523***
	(0.000)	(0.002)	(0.000)	(0.080)	(0.475)	(0.074)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
DIV	0.052***	0.040***	0.037***	0.057	0.017	0.122	0.016	0.013	0.015*	0.134***	0.083***	0.084***
	(0.000)	(0.000)	(0.000)	(0.138)	(0.868)	(0.118)	(0.184)	(0.486)	(0.074)	(0.001)	(0.003)	(0.000)
KA	-0.060**	-0.146***	-0.100***	-0.016	-0.096**	-0.001	-0.057**	-0.029	-0.051***	-0.030	-0.045*	-0.052***
	(0.019)	(0.000)	(0.000)	(0.628)	(0.027)	(0.976)	(0.047)	(0.251)	(0.001)	(0.386)	(0.099)	(0.008)
LA	0.018**	0.008	0.011**	-0.007	-0.014	-0.033	0.017	0.021	0.018**	-0.032	-0.032*	-0.026**
	(0.014)	(0.284)	(0.024)	(0.730)	(0.929)	(0.420)	(0.169)	(0.189)	(0.022)	(0.115)	(0.063)	(0.032)
CI	-0.057**	-0.146***	-0.083***	-0.019	-0.109	-0.051*	-0.073**	-0.048*	-0.071***	-0.124***	-0.105***	-0.105***
	(0.041)	(0.000)	(0.001)	(0.423)	(0.126)	(0.096)	(0.035)	(0.092)	(0.000)	(0.000)	(0.000)	(0.000)
MS	-0.195***	0.034	-0.153**	0.171	-0.262	0.255	0.074	0.117**	0.095**	1.370***	-0.262	0.509
	(0.003)	(0.790)	(0.045)	(0.142)	(0.657)	(0.275)	(0.399)	(0.012)	(0.035)	(0.001)	(0.608)	(0.391)
HH	-0.042*	0.004**	0.005***	-0.004	-0.016	-0.019	-0.022***	0.004***	0.004***	0.033	0.002	0.002
	(0.085)	(0.029)	(0.002)	(0.450)	(0.851)	(0.518)	(0.007)	(0.001)	(0.001)	(0.160)	(0.381)	(0.354)
SAV	-0.311	0.597	0.022	1.272	-7.859	11.641	0.720	0.774	1.286***	2.163*	0.252	0.888
	(0.197)	(0.139)	(0.924)	(0.258)	(0.867)	(0.335)	(0.145)	(0.384)	(0.002)	(0.068)	(0.868)	(0.406)
COOP	0.808**	1.274***	0.812***	-5.190		-1.699	0.042	-0.401	0.300			
	(0.040)	(0.000)	(0.003)	(0.451)		(0.862)	(0.947)	(0.481)	(0.503)			
_cons	14.675*	7.874***	3.191	9.464	50.363	50.529	14.292***	-0.582	1.109	-21.581	3.948*	3.464
	(0.095)	(0.000)	(0.121)	(0.468)	(0.828)	(0.499)	(0.000)	(0.834)	(0.498)	(0.244)	(0.093)	(0.110)
N	1803	2370	4173	108	69	177	669	473	1142	171	333	504
hansenp	0.000	0.300	0.127	0.923	1.000	1.000	0.208	0.905	0.761	0.468	1.000	1.000
ar2	0.417	0.425	0.361	0.392	0.243	0.892	0.269	0.882	0.266	0.202	0.470	0.147

Note: The two-step system GMM estimator with Windmeijer correction is used. P-values for tests of the significance of the estimated coefficients are reported in brackets. Year dummies from 1992 through 2007 are included in the model, but not reported. '9298' is subperiod 1992-98, '9907' is the subperiod 1999-2007, and '9207' is the entire sample period 1992-2007. ROE is the dependent variable.
Hansen is the p-value of the Hansen statistic of joint validity of instruments.
AR(2) is the p-value for the test of second order autocorrelation in disturbances in the first differences equation.
*, **, and *** denote coefficients that are significant at the 10%, 5% and 1% levels, respectively.
Variables for which no coefficient is reported are omitted due to collinearity.

Table 5 Determinants of ROA --- Individual Country Results

	Belgium			Denmark			France			Germany		
	9298	**9907**	**9207**	**9298**	**9907**	**9207**	**9298**	**9907**	**9207**	**9298**	**9907**	**9207**
PROF(-1)	0.358***	0.543***	0.578***	0.099	0.125**	0.093	0.669***	0.228***	0.488***	0.642***	0.252***	0.246***
	(0.008)	(0.000)	(0.000)	(0.548)	(0.015)	(0.513)	(0.000)	(0.001)	(0.000)	(0.000)	(0.004)	(0.003)
DIV	0.004*	0.009***	0.006***	0.013***	0.024***	0.018	0.002*	0.005***	0.003***	0.001***	0.002***	0.002***
	(0.077)	(0.001)	(0.000)	(0.000)	(0.000)	(0.461)	(0.077)	(0.000)	(0.004)	(0.005)	(0.000)	(0.000)
KA	0.010	-0.001	0.003	0.029***	0.053***	0.039	0.003	0.014***	0.010***	0.002	0.012***	0.008***
	(0.155)	(0.876)	(0.564)	(0.002)	(0.000)	(0.427)	(0.497)	(0.000)	(0.005)	(0.149)	(0.000)	(0.000)
LA	0.005**	0.003	0.001	-0.003	0.005	0.000	0.001*	0.003***	0.002***	0.000	0.000	0.000*
	(0.029)	(0.387)	(0.448)	(0.426)	(0.127)	(0.988)	(0.056)	(0.003)	(0.005)	(0.729)	(0.365)	(0.071)
CI	-0.008***	-0.015***	-0.010***	-0.024***	-0.023***	-0.024*	-0.005***	-0.008***	-0.006***	-0.002***	-0.004***	-0.004***
	(0.009)	(0.000)	(0.000)	(0.000)	(0.000)	(0.057)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MS	-0.005	0.009***	0.003	-0.010*	-0.007**	-0.011	-0.008*	-0.020*	-0.009*	0.000	-0.001	-0.001
	(0.160)	(0.005)	(0.362)	(0.058)	(0.011)	(0.680)	(0.067)	(0.082)	(0.053)	(0.955)	(0.661)	(0.592)
HH	-0.000	0.000	0.000	-0.009*	-0.001***	-0.001	-0.011**	0.003***	0.004***	-0.001***	0.000***	0.000***
	(0.764)	(0.667)	(0.509)	(0.070)	(0.004)	(0.544)	(0.035)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
SAV	0.058	0.175	0.044	0.044	-0.194***	-0.071	0.021	-0.050	0.009	0.005	-0.014	-0.009
	(0.244)	(0.146)	(0.386)	(0.585)	(0.003)	(0.874)	(0.527)	(0.181)	(0.717)	(0.685)	(0.499)	(0.567)
COOP	-0.029	0.354***	0.143*	-0.004	0.122	-0.120	0.007	-0.058	0.010	0.002	0.047**	0.033**
	(0.653)	(0.004)	(0.068)	(0.987)	(0.876)	(0.918)	(0.824)	(0.192)	(0.708)	(0.890)	(0.016)	(0.026)
_cons	0.260	-0.109	-0.563	26.233**	2.150***	3.297	7.022**	-3.334***	-3.488***	0.312***	-0.375***	-0.361***
	(0.529)	(0.943)	(0.706)	(0.040)	(0.001)	(0.408)	(0.029)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
N	235	161	396	601	666	1267	1346	1600	2946	6466	10892	17358
hansenp	0.514	1.000	1.000	0.324	0.519	0.317	0.134	0.167	0.178	0.376	0.000	0.000
ar2	0.178	0.306	0.094	0.954	0.202	0.348	0.898	0.169	0.069	0.047	0.884	0.758

Note: The two-step system GMM estimator with Windmeijer correction is used. P-values for tests of the significance of the estimated coefficients are reported in brackets. Year dummies from 1992 through 2007 are included in the model, but not reported. '9298' is subperiod 1992-98, '9907' is the subperiod 1999-2007, and '9207' is the entire sample period 1992-2007. ROA is the dependent variable.
Hansen is the p-value of the Hansen statistic of joint validity of instruments.
AR(2) is the p-value for the test of second order autocorrelation in disturbances in the first differences equation.
*, **, and *** denote coefficients that are significant at the 10%, 5% and 1% levels, respectively.
Variables for which no coefficient is reported are omitted due to collinearity.

Table 5 (cont'd) Determinants of ROA --- Individual Country Results

	Italy			Netherlands			Spain			UK		
	9298	**9907**	**9207**	**9298**	**9907**	**9207**	**9298**	**9907**	**9207**	**9298**	**9907**	**9207**
PROF(-1)	0.673***	0.190***	0.321***	0.710***	0.604***	0.607***	0.680***	0.517***	0.658***	0.769***	0.531***	0.703***
	(0.000)	(0.004)	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
DIV	0.006***	0.004***	0.005***	0.005	-0.002	0.004	0.004**	0.003	0.003**	0.011**	0.009***	0.009***
	(0.000)	(0.001)	(0.000)	(0.426)	(0.693)	(0.328)	(0.027)	(0.181)	(0.039)	(0.047)	(0.009)	(0.001)
KA	0.011**	0.025***	0.024***	0.005	0.004**	0.007	0.004	0.005**	0.004	0.020***	0.011***	0.014***
	(0.018)	(0.000)	(0.000)	(0.490)	(0.044)	(0.162)	(0.408)	(0.027)	(0.123)	(0.008)	(0.003)	(0.000)
LA	0.002**	0.001	0.002**	-0.001	-0.001	-0.001	0.002*	0.003***	0.002**	-0.003	-0.003	-0.002
	(0.013)	(0.170)	(0.026)	(0.418)	(0.671)	(0.654)	(0.061)	(0.005)	(0.018)	(0.103)	(0.263)	(0.286)
CI	-0.007***	-0.016***	-0.011***	-0.001	-0.010***	-0.004**	-0.011***	-0.013***	-0.011***	-0.009***	-0.012***	-0.011***
	(0.009)	(0.000)	(0.000)	(0.561)	(0.003)	(0.025)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)
MS	-0.010*	-0.004	-0.014	0.005	-0.029*	-0.003	-0.003	0.004	0.001	0.003	-0.071***	-0.040**
	(0.071)	(0.841)	(0.214)	(0.489)	(0.092)	(0.734)	(0.708)	(0.381)	(0.903)	(0.828)	(0.002)	(0.020)
HH	0.001**	0.001***	0.000***	-0.000	-0.002	-0.003**	-0.003***	0.000***	0.000***	-0.001***	0.000	0.000
	(0.030)	(0.001)	(0.001)	(0.507)	(0.130)	(0.013)	(0.000)	(0.002)	(0.000)	(0.001)	(0.137)	(0.235)
SAV	0.033	0.092**	0.028	0.102	-0.048	0.041	0.086**	0.047	0.057*	0.126	-0.072	-0.020
	(0.219)	(0.018)	(0.275)	(0.331)	(0.648)	(0.537)	(0.038)	(0.352)	(0.096)	(0.337)	(0.835)	(0.928)
COOP	0.108**	0.214***	0.219***	-0.066		0.091	0.039	0.009	0.022			
	(0.020)	(0.000)	(0.000)	(0.875)		(0.850)	(0.654)	(0.887)	(0.670)			
_cons	-0.483	0.343**	0.003	0.754	4.980	6.574**	1.666***	0.125	-0.007	1.357***	0.048	-0.079
	(0.183)	(0.048)	(0.991)	(0.560)	(0.105)	(0.013)	(0.000)	(0.484)	(0.968)	(0.001)	(0.895)	(0.819)
N	1794	2391	4185	103	71	174	676	476	1152	168	320	488
hansenp	0.025	0.164	0.278	0.985	1.000	1.000	0.147	0.756	0.277	0.487	1.000	1.000
ar2	0.150	0.594	0.864	0.451	0.165	0.286	0.887	0.983	0.672	0.997	0.654	0.668

Note: The two-step system GMM estimator with Windmeijer correction is used. P-values for tests of the significance of the estimated coefficients are reported in brackets. Year dummies from 1992 through 2007 are included in the model, but not reported. '9298' is subperiod 1992-98, '9907' is the subperiod 1999-2007, and '9207' is the entire sample period 1992-2007. ROA is the dependent variable.
Hansen is the p-value of the Hansen statistic of joint validity of instruments.
AR(2) is the p-value for the test of second order autocorrelation in disturbances in the first differences equation.
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