

## **The Euro and Firm Performance: Evidence from a Panel of European Firms**

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*This paper examines the effect of the Euro on financial performance of companies in the European countries using firm level data during 1980-2006. The main objective of the study is to examine how firm performance changed in the EMU countries following introduction of the Euro in 1999. I find strong evidence of improvements in firm profitability, output, and employment in the EMU countries. This study reveals cross sectional differences in efficiency and investment changes, as well as in dividend policies and market valuations. The analysis indicates that European firms benefited from the introduction of the common currency.*

### **INTRODUCTION**

The launch of the common currency in the European Monetary Union (EMU) presents an extraordinary chance to examine the impact of financial liberalization on financial and operating performance of European corporations. It is also a complicated undertaking because the liberalization process covered many years and all liberalization steps were announced far in advance, which makes it difficult both to pinpoint the exact time when companies started changing their operating and financing policies in response to new economic environment, and to choose the appropriate time frame. In present study, I explore this subject by estimating dynamics of firm performance in a panel regression model with fixed time and cross-section effects using least squares method in a sample of eleven EMU (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain) and five non-EMU (Denmark, Norway, Sweden, Switzerland, and the UK) using annual data from 1980 to 2006.

I construct performance measures for profitability, operating efficiency, capital investment, output, employment, leverage, and dividends. I also use Tobin's Q as a measure of market valuation. The main focus of the study is to examine how firm performance changed in the EMU countries following introduction of the Euro in 1999, and whether there is variation in performance measure changes across different countries or industry sectors.

Several recent studies have examined the influence of liberalization on firm performance. Morck and Yeung (1991), Rose and van Wincoop (2001), Efthymios et al (2003) conclude that deregulation should increase firm performance. Several studies, including Dumas and Solnik (1995), De Santis and Gerard (1998), Carrieri (2001), and De Santis et al (2003) detect that

currency risk is significant risk factor, and thus elimination of the currency risk as a result of the common currency should make company cash flows more stable and increase market valuation. Bris et al (2008) study changes in corporate valuations that followed the introduction of the Euro and find that the common currency results in higher Tobin's Q. von Eije and Megginson (2008) examine cash dividends and share repurchases in the EMU and discover that the fraction of European firms that pay dividends has declined in recent years, while the total real dividends paid and share repurchases have increased. On the other hand, several papers propose that financial liberalization is not the single factor that determines firm performance. Stulz (1999, 2005) finds that liberalization reduces the cost of equity capital but the effect is smaller than expected and depends on firm-specific factors, and La Porta et al (1998) determine that legal system and law enforcement may shape corporate governance practices in individual countries.

In the present study, I find that firm profitability increases in the EMU countries, while average firm efficiency and investment declines after the Euro. The analysis reveals cross sectional differences in efficiency and investment changes. Additionally, I find strong evidence of increases in real output and employment for firms in most EMU countries and in most industry sectors. Finally, I document cross-sectional variation of the effect of the Euro on dividend policies and market valuation.

This study differs from the related literature in that it covers a wide array of performance aspects for European companies, unlike the study of market valuations in the EMU by Bris et al (2008), or analysis of dividend policies by von Eije and Megginson (2008). I test for changes that occur after the introduction of the Euro in firm profitability, operating efficiency, capital investment, output, employment, leverage, dividends, and market valuation. This paper contributes to the literature by providing additional evidence of significant changes in firm performance after liberalization. The evidence is obtained after controlling for firm and year fixed effects, firm characteristics such as size, profitability, and leverage, as well as for country characteristics, which include short term interest rates, term structure, and real GDP growth rate.

The paper is organized as follows. The next section outlines the hypotheses, section three describes the data, and section four outlines the methodology. The fifth section presents the results and is followed by the conclusion.

## **HYPOTHESES**

The purpose of this paper is to examine the effect of the Euro on firm performance. The firm performance is evaluated using measures for profitability, operating efficiency, capital investment, and output. I also test for changes in firm employment, capital structure and dividend policies. Economic theory offers conflicting arguments with respect to liberalization, including arguments that liberalization should stimulate economic progress, and arguments that liberalization should inhibit growth.

Many studies, including Rivera-Batiz and Romer (1991), Obstfeld (1994), Lee et al (1997), Kao et al (1999), and Kutan and Yigit (2007), suggest that liberalization should lead to reduction of risk, increasing use of comparative advantage, economies of scale, technology transfer, and subsequent economic growth. Hence, if liberalization increases economic development, one should expect improvements in profitability, output, and efficiency for companies in the countries that undergo major liberalization events such as introduction of the Euro.

Supporters of protectionist policies, on the other hand, maintain that reduction of import tariffs should hurt local companies because it will open them to more foreign competition. For

example, classical economic theory implies that import tariffs increase aggregate demand for local products, stimulate import substitution, and move the economy towards full employment, while international trade will hurt countries with less advanced technology and stage of economic development (see Myint, 1958). Infant industry protectionist argument suggests that the structure of costs and technology may vary across countries, and liberalization will hurt countries that have industries which are less technologically advanced (Amsden, 1989).

A decrease in transaction costs after introduction of the Euro should present firms with superior investment opportunities resulting from comparative advantage and economies of scale. One would expect investment increases for the firms if their competitive position improved in the foreign markets and they need to produce more, or firms that need to re-allocate productive resources in order to become more competitive in the home markets because of greater competition. Alternatively, some firms may not be able to increase investment, especially if they experience liquidity setbacks and are vulnerable to foreign competition.

Greater competition may imply that very inefficient firms may have to lay off workers or cease operations. Thus, at least in the short run one may expect employment to decrease. Alternatively, if the financial liberalization leads to utilization of comparative advantage by firms in different countries, then companies will experience greater demand for their products and will hire more workers to meet the demand. Reduction in employment is a great concern for politicians in countries engaging in the process of liberalization.

The common currency reduces transaction costs in the financial markets. Studies such as Adler and Qi (2000) or Mittoo (2003), among others, evaluate the effect of liberalization on stock market integration in North America. Stulz (1999) and Bris et al (2008) argue that stock market integration lowers cost of equity capital and as a result reduces leverage, because equity capital becomes cheaper. Alternatively, risk sharing and comparative advantage that in theory come with liberalization should reduce cash flow volatility for businesses. More stable cash flows lower probability of financial distress and allow companies to use greater financial leverage. See Opler and Titman (1994) for the discussion of the relationship between financial distress and leverage.

The dividends may increase after the introduction of the Euro, especially if private investors observe improvements in profitability for European companies, and eventually demand greater cash distributions. Alternatively, firms most vulnerable from foreign competition may find it difficult to sustain pre-liberalization payout levels, and may decrease dividends. In addition, if firms identify great investment opportunities resulting from the reduction in transaction costs, then there will be less cash available for distribution and thus dividends may decrease. Finally, companies may keep their dividends stable and there will be no effect of the Euro on dividend payout.

In this study I test whether the Euro led to improvements in profitability, operating efficiency, capital expenditure, output, and dividends in the EMU. I also investigate whether European firms display significant decreases in employment and leverage.

## **DATA**

I study measures of firm performance during the period 1980-2006 for countries in the European Monetary Union. I use panel data for firms from the EMU countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain) and non-EMU countries (Denmark, Norway, Sweden, Switzerland, and the UK) available from

the Datastream. I include the non-EMU countries as a benchmark to assess the effect of the Euro on firm performance.

I collect firm-level data on Net Income, Sales, Total Assets, Shareholders' Equity, Number of Employees, Capital Expenditures, Total Debt, and Cash Dividends. In addition, I use Consumer Price Index (CPI) data from the Datastream. I use these data to construct several firm performance measures. These measures include proxies for profitability, operating efficiency, capital investment, output, employment, leverage, and dividends.

**TABLE 1**  
**DESCRIPTIVE STATISTICS**

**Panel A. Profitability, efficiency, and investment.**

Variable	ROS	ROA	ROE	SALEFF	NIEFF	CESA	CETA
EMU							
Mean	0.0370	0.0222	0.0767	1.0815	0.2747	2.5464	3.1594
Median	0.0323	0.0249	0.0916	1.0000	0.7868	0.9529	0.9914
Maximum	1.8586	0.2557	1.0050	30.8419	45064.74	2469.5800	2253.0570
Minimum	-3.5996	-1.6293	-1.5628	0.0000	-240802.7	0.0000	0.0000
Std. Dev.	0.1665	0.0698	0.1722	0.8272	1544.6900	27.7244	32.4183
Obs	35101	35284	31868	27779	27793	24519	24555
Non - EMU							
Mean	-0.0602	-0.0053	0.0425	1.3627	1.1290	1.5558	1.7863
Median	0.0416	0.0301	0.0655	1.0000	0.8057	0.9541	0.9685
Maximum	1.3783	0.2801	0.7320	393.11	4064.59	130.22	538.77
Minimum	-10.0427	-1.5174	-1.7638	0.0000	-9479.2610	0.0000	0.0000
Std. Dev.	0.6004	0.1616	0.2407	5.7825	87.8813	3.9504	7.5475
Obs	25810	26839	23714	18019	17600	19386	19778

**Panel B. Output, employment, leverage, dividends and Tobin's Q.**

Variable	SALR	EMPLOYEES	LEV	DIVSAL	PAYOUT	TOBINSQ
EMU						
Mean	4.5458	4561.7250	0.2137	0.0192	0.2673	2.8768
Median	1.0000	844.0000	0.2006	0.0069	0.1956	0.8404
Maximum	4931.8770	342654.0000	0.8348	1.3664	14.7565	2420.1430
Minimum	0.0000	0.0000	0.0000	0.0000	-4.1951	0.0225
Std. Dev.	81.6054	12590.9300	0.1645	0.0487	0.3607	47.4832
Obs	31641	33219	36292	34764	33622	31353
Non - EMU						
Mean	4.5947	3267.7000	0.1809	0.0173	0.2211	1.2468
Median	1.0000	508.0000	0.1490	0.0098	0.1617	0.9540
Maximum	4610.44	102900.00	0.87	0.62	7.74	10.30
Minimum	0.0000	1.0000	0.0000	0.0000	-4.0833	0.0456
Std. Dev.	66.7447	7842.2590	0.1633	0.0244	0.2827	0.9627
Obs	20204	25505	28031	26595	26497	24503

**TABLE 1**  
**DESCRIPTIVE STATISTICS (CONTINUED)**

**Panel C. Control variables.**

Variable	Company Information		Country Information		
	Log(TA)	SDS	GDPG	SRATE	TS
	EMU				
Mean	12.3438	0.2664	2.1868	6.9699	1.0622
Median	12.1282	0.0144	1.9821	5.4500	1.3800
Maximum	20.9221	494.2366	19.5663	24.0000	4.7100
Minimum	3.6109	-337.6294	-6.0608	2.0000	-3.8400
Std. Dev.	2.1684	6.4924	2.0636	4.4873	1.3842
Obs	28409	27234	99712	111572	102283
	Non-EMU				
Mean	12.2749	0.6312	2.3730	7.5483	0.2926
Median	12.2341	0.0227	2.7464	6.3100	0.5126
Maximum	21.8643	1105.2110	6.0564	16.8100	3.0900
Minimum	2.6391	-33.5466	-2.0818	0.1800	-6.5600
Std. Dev.	2.6446	12.6223	1.7299	3.8971	1.8107
Obs	19546	17553	98550	96959	95589

I use company balance sheet and income statement data to construct performance proxies. In particular, I construct measures for profitability (return on sales ROS = Net Income/Sales, return on assets ROA = Net Income/Total Assets, return on equity ROE = Net Income/Shareholders Equity), operating efficiency (sales efficiency SALEFF = Sales / Employment, net income efficiency NIEFF = Net Income/ Employment), capital investment (capital expenditure to sales CESA) = Capital expenditure / Sales, capital expenditure to total assets CETA = Capital expenditure / Total assets), output (real sales SALR = Nominal sales / Consumer price index), employment, leverage LEV = Total debt / Total assets, dividends (DIVSAL = Cash dividend / Sales, Payout = Cash dividend / Net Income), and market valuation (Tobin's Q = (Market value of equity + Total Debt) / Total assets). In constructing variables I use local currency data. When I compute real sales and sales efficiency, I deflate the data by local CPI index and normalize observations by real sales in year 0 (the year when Euro was introduced, 1999 for all countries except for Greece, which adopted the Euro in 2003). I also use a similar procedure to compute net income efficiency.

Control variables include data that account for firm characteristics, as well as for economic conditions in different countries. The company control variables include: the natural logarithm of lagged Total Assets  $\text{Log}(TA_{t-1})$ , lagged leverage ratio  $\text{LEV}_{t-1}$ , and net income stability variable SDS. SDS is defined as standard deviation of previous three years' Net Income divided by last years' Sales. The country information variables include growth rate of real GDP, short term interest rate SRATE, and term structure variable TS. Variable SRATE is defined as annualized 3-month interest rate on government securities. The choice of 3-month security is based on availability of data for government securities with the shortest maturity across all countries. Variable TS is defined as the difference between average yield on long term government bonds and the short term interest rate.

Table 1 Panels A and B present descriptive statistics for firm performance data. Firms in the EMU countries have more employees; they display greater profitability, investment, leverage,

and Tobin's Q. For example, the mean ROE in the EMU firms is 0.0767, whereas the mean ROE in the non-EMU firms is 0.0425. Table 1 Panel C presents descriptive statistics for control variables. An average firm in the EMU is larger than that not in EMU, since average logarithm of Total Assets is 12.3438 in the EMU, while the average for non-EMU firms is 12.2749. In addition, the earnings of non-EMU firms are more volatile, since mean SDS for non-EMU firms is 0.6312 and for EMU firms it is 0.2664. Country information variables suggest that the EMU countries on average grow at a lower rate than non-EMU countries, they have lower short term interest rate and their term structure is steeper than for non-EMU countries. For example, mean TS is 1.0622 for the EMU countries and 0.2926 for non-EMU countries.

The datasets for several European countries such as Ireland, Greece, or Portugal are relatively small and have a lot of missing observations. This presents a potential for survivorship bias. To mitigate the problem, I include companies for which I can construct at least one performance proxy for at least one year during 1980-2006 period. To ensure that the results are not driven by outliers, I exclude from analysis top and bottom 5% observations. The total number of firm-years available from the Datastream is 214947, or 7961 companies during 27 years. The number of usable observations is 64323; this includes 36292 observations from the EMU and 28031 observations from non-EMU countries.

## METHOD

In order to examine the effect of Euro on firm performance, I estimate a fixed effect panel regression model for 1980-2006. The dependent variable is a measure of firm performance. An indicator variable Euro takes value of 1 for the EMU countries after the implemented the common currency. For all countries except Greece variable Euro=1 after 1999, for Greece Euro=1 after 2003, and zero otherwise. I estimate the following model using least squares method:

$$P_{i,t} = \alpha_i + \beta_t + \gamma X_{i,t} + \delta Y_{c,t} + \lambda Euro_{c,t} + \varepsilon_{i,c,t}, \quad (1)$$

where  $\alpha_i$  is fixed effect for firm  $i$ ,  $\beta_t$  is fixed effect for year  $t$ ,  $\gamma$  is a vector of coefficients for firm characteristics  $X_{i,t}$ ,  $\delta$  is a vector of coefficients for country  $c$  control variables  $Y_{c,t}$ . The effect of Euro on firm performance is estimated by coefficient  $\lambda$ , and  $\varepsilon_{i,c,t}$  is regression residual. The standard errors are computed using diagonal White method.

The fixed year effects  $\beta_t$  allow to control for common tendencies across all European countries, and fixed firm effects  $\alpha_i$  allow to control for firm-specific unobservable factors such as management policies or production technology, factors such as industry, and for country factors affecting all firms in a given country  $c$  such as accounting rules and legal environment. The firm characteristics variables include: lagged leverage  $LEV_{t-1}$ , the natural logarithm of lagged total assets  $LOG(TA_{t-1})$ , standard deviation of Net Income over previous 3 years normalized by last year's sales SDS. Country control variables include annual real GDP growth rate  $GDPG$ , annualized yield on 3 months government securities  $SRATE$ , and a term structure variable  $TS$  defined as the difference between long term government bond yield and short term interest rate on government securities.

To study the effect of the Euro in countries that had different levels of financial stability prior to implementation of the common currency, I use two dummy variables, WEAK and STRONG. Variable WEAK equals 1 for the EMU countries that recently had a financial crisis (Finland, Greece, Ireland, Italy, Portugal and Spain), and zero otherwise. STRONG equals 1 for the EMU

countries that did not have a financial crisis in the years preceding the Euro (Austria, Belgium, France, Germany, and the Netherlands). In order to see if there is any difference in the liberalization effect in these countries, I estimate the following model:

$$P_{i,t} = \alpha_i + \beta_t + \gamma X_{i,t} + \delta Y_{c,t} + \rho_w Euro_{c,t} WEAK_c + \rho_s Euro_{c,t} STRONG_c + v_{i,c,t}, \quad (2)$$

where coefficient  $\rho_w$  represents the effect of the Euro on firm performance in countries with less stable currencies, coefficient  $\rho_s$  represents the effect of the Euro on firm performance in countries with strong currencies, and  $v_{i,c,t}$  is regression residual.

To examine the effect of Euro on individual industry sectors, I estimate a fixed effects model that includes firm performance as the dependent variable, and products of industry dummies and Euro as independent variables, together with firm characteristics and country characteristics variables:

$$P_{i,t} = \alpha_i + \beta_t + \gamma X_{i,t} + \delta Y_{c,t} + \sum_{\forall k} \phi_k I_{k,i} Euro_{c,t} + \zeta_{i,c,t}, \quad (3)$$

where  $\phi_k$  is a coefficient that represents the estimated effect of the Euro on industry  $k$ ,  $I_k$  is an industry dummy, and  $\zeta_{i,c,t}$  is regression residual. The industries include Oil & Gas, Basic Materials, Industrials, Consumer Goods, Health Care, Consumer Services, Telecommunications, Utilities, Financials, and Technology.

Finally, to study the effect of Euro on individual EMU countries, I estimate a model that includes firm performance as the dependent variable, and products of EMU country dummies and Euro as independent variables, in addition to firm and country control variables:

$$P_{i,t} = \alpha_i + \beta_t + \gamma X_{i,t} + \delta Y_{c,t} + \sum_{\forall c} \mu_c I_{c,i} Euro_{c,t} + \chi_{i,c,t}, \quad (4)$$

where  $\mu_c$  is a coefficient that represents the estimated effect of the Euro on country  $c$ ,  $I_c$  is a country dummy, and  $\chi_{i,c,t}$  is residual. The EMU country dummies include indicator variables for Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain.

## EMPIRICAL RESULTS

### The Euro and Firm Performance

Estimation results for equation (1) for measures of profitability, efficiency, and investment are presented in Table 2 Panel A. The results suggest positive and significant impact of the Euro on firm profitability. The estimated coefficient for variable Euro is positive and highly significant for all three measures of profitability. For example, the coefficient for Euro in equation where the dependent variable is ROE is estimated 0.0149, with corresponding probability <0.001. Thus, I obtain clear evidence that the common currency had a positive impact on average firm profitability. This result supports the hypothesis that financial liberalization should have a positive impact on economic growth.

The estimated coefficients for variable Euro in regressions with efficiency proxies SALEFF and NIEFF are negative. The coefficient in regression with SALEFF is estimated at -0.0791 and highly significant, while the coefficient in regression with NIEFF is insignificant. Thus, estimation results suggest that average sales per employee decreased in the EMU countries after the Euro was introduced. I interpret this result as evidence that the level of competition may have

increased in the EMU as a result of decreased transaction costs and therefore easier access to domestic markets for foreign competitors. Thus, the hypothesis that liberalization should increase efficiency is not supported.

**TABLE 2**  
**THE INTRODUCTION OF THE EURO AND FIRM PERFORMANCE**

**Panel A. Profitability, efficiency, and investment.**

Variable	ROS	ROA	ROE	SALEFF	NIEFF	CESA	CETA
Intercept	0.4350*** (0.000)	0.2131*** (0.000)	0.3936*** (0.000)	0.5099 (0.386)	-133.7347 (0.285)	-0.9169 (0.442)	-12.0368 (0.047)
LEV <sub>t-1</sub>	0.0032 (0.863)	-0.0497*** (0.000)	-0.0720*** (0.000)	-0.2992* (0.081)	-0.9036 (0.966)	-0.0561 (0.912)	-0.9506 (0.226)
Log(TA <sub>t-1</sub> )	-0.0336*** (0.000)	-0.0144*** (0.000)	-0.0266*** (0.000)	0.0466 (0.304)	11.2075 (0.251)	0.1652* (0.065)	1.0555** (0.029)
SDS	-0.0001 (0.764)	-0.0001 (0.188)	-0.0002 (0.236)	-0.0056 (0.285)	0.0318 (0.363)	0.0035*** (0.006)	-0.0027 (0.359)
Euro	0.0141*** (0.000)	0.0082*** (0.000)	0.0149*** (0.000)	-0.0791*** (0.000)	-21.4995 (0.226)	-0.0390 (0.814)	-1.0938*** (0.004)
GDPG	0.0011 (0.121)	0.0014*** (0.000)	0.0063*** (0.000)	-0.0026 (0.728)	0.3033 (0.830)	0.1123 (0.285)	0.2596** (0.039)
SRATE	-0.0007 (0.459)	-0.0017*** (0.000)	0.0017** (0.048)	0.0358** (0.016)	-1.5509 (0.514)	0.0955* (0.052)	0.1079* (0.070)
TS	0.0021** (0.044)	0.0000 (0.981)	0.0011 (0.274)	0.0216 (0.129)	-0.4030 (0.758)	0.0066 (0.916)	0.0954 (0.294)
Firm effects	YES	YES	YES	YES	YES	YES	YES
Year effects	YES	YES	YES	YES	YES	YES	YES
Adj. R2	0.5882	0.5157	0.4600	0.6363	-0.0870	0.7076	0.5861
Years	24	24	24	24	24	24	24
Firms	4554	4577	4540	3210	3191	3039	3071
Obs.	37268	37034	36224	33011	32713	31110	31064

The numbers in parentheses are coefficient p-values, \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1%-levels, respectively.

Estimation results indicate a negative effect of the Euro on firm investment, on average. The coefficient estimates for Euro are negative in regressions where the dependent variable is CESA (CETA). The coefficient for Euro in the regression for CESA is insignificant, while in the regression for CETA it is estimated at -1.0938 with the corresponding p-value of 0.004. Hence, the evidence does not support the hypothesis that firm investment should increase with liberalization, on average.

Table 2 Panel B presents estimation results for equation (1) for measures of real output, employment, leverage, dividends and Tobin's Q. The results suggest that real sales increased after the Euro, because the estimated coefficient for EURO in the regression with real sales SALR as the dependent variable is estimated at 0.4971 and significant at 5% level. It implies that the evidence supports the hypothesis suggesting that financial liberalization should improve real sales.



An important question for any policy decision is whether a given reform will hurt workers. Opponents of liberalization often suggest that firms will lay off employees when a country undergoes reforms such as introduction of the common currency. The data strongly rejects the hypothesis that the Euro had a negative impact on workers. The estimated coefficient for Euro in the regression with EMPLOYEES as the dependent variable is positive and highly significant. The coefficient is estimated at 1300.001, which implies that an average corporation in an EMU country hired 1300 new workers after the introduction of the Euro. Therefore, I discover clear evidence that the Euro on average had a positive effect on firm employment.

**TABLE 2**  
**THE INTRODUCTION OF THE EURO AND FIRM PERFORMANCE (CONTINUED)**

**Panel B. Output, employment, leverage, dividends and Tobin's Q.**

Variable	SALR	EMPLOYEES	LEV	DIVSAL	PAYOUT	TOBINSQ
Intercept	-64.5013*** (0.000)	-24717.77*** (0.000)	-0.1726*** (0.000)	0.0009 (0.814)	0.0253 (0.560)	2.2509 (0.353)
LEV <sub>t-1</sub>	-3.6356 (0.108)	187.9502 (0.369)	0.5847*** (0.000)	-0.0265*** (0.000)	-0.2598*** (0.000)	-4.5424*** (0.005)
Log(TA <sub>t-1</sub> )	5.6500*** (0.000)	2262.844*** (0.000)	0.0200*** (0.000)	0.0018*** (0.000)	0.0280*** (0.000)	-0.9963*** (0.007)
SDS	-0.0343 (0.177)	4.9007*** (0.000)	0.0002*** (0.005)	0.0000 (0.152)	0.0001 (0.547)	-0.0055*** (0.020)
Euro	0.4971** (0.021)	1300.001*** (0.000)	0.0040** (0.025)	-0.0007 (0.186)	-0.0172** (0.043)	-0.2648 (0.278)
GDPG	0.2280 (0.146)	43.8522*** (0.004)	-0.0033*** (0.000)	0.0007* (0.070)	0.0029* (0.094)	0.3695*** (0.001)
SRATE	0.0264 (0.812)	63.0868 (0.120)	0.0022*** (0.000)	-0.0001 (0.475)	-0.0105*** (0.000)	2.4822*** (0.008)
TS	-0.3702* (0.096)	35.4730 (0.414)	0.0013** (0.029)	0.0000 (0.918)	-0.0104*** (0.001)	1.1882* (0.083)
Firm effects	YES	YES	YES	YES	YES	YES
Year effects	YES	YES	YES	YES	YES	YES
Adj. R2	0.8720	0.9152	0.7999	0.7111	0.3116	-0.0095
Years	24	24	24	24	24	24
Firms	3480	4489	4652	4582	4612	4548
Obs.	32535	36211	39147	37513	35233	36004

The numbers in parentheses are coefficient p-values, \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1%-levels, respectively.

The estimated coefficient for Euro in a regression with leverage LEV is estimated at 0.0040 and significant at 5% level. It means that leverage increased in the EMU countries by 0.4%, on average. This evidence provides support for the hypothesis that firms should increase leverage because of more stable cash flows, and does not support the hypothesis that firms should reduce leverage because the cost of equity capital is cheaper due to financial markets integration.

Estimation results suggest that the amount of cash dividends paid by corporations to investors declined after the Euro was introduced. The coefficients for EURO are negative for regressions with both DIVSAL and PAYOUT proxies as dependent variables. The coefficient for PAYOUT

is -0.0172 and significant at 5% level, while the coefficient for DIVSAL is insignificant. Hence, I reject the hypothesis that firms will increase payouts. The result is similar to findings by von Eije and Megginson (2008), who discover that European firms reduced dividend payouts and increased the use of share repurchases as a form of cash distribution to investors.

Finally, the firm valuation consequence of the common currency is estimated by the coefficient for Euro in a regression with TOBINSQ as the dependent variable. The coefficient is estimated at -0.2648 and it is insignificant. Therefore, I do not find any effect of the Euro on firm valuation, on average.

### **The Euro, Financial Stability, and Firm Performance**

Financial liberalization may have different effects on countries with stronger or weaker economies, as suggested by the classical economic theory. To evaluate the effect of the Euro on firms in countries with different degrees of financial stability, I separate the EMU countries into those with stable currency and the countries that had a currency crisis in the years preceding the Euro. To evaluate the differential effect of Euro on firm performance in financially stable vs. weak countries, I estimate equation (2) and present the results in Table 3.

Panel A of Table 3 presents estimation results for profitability, efficiency, and investment. Test results for profitability variables suggest that in both weak and strong countries firm profitability increased with the common currency. For example, for the equation with ROA as the dependent variable, the coefficient for Euro\*WEAK is 0.0069 and highly significant, while the coefficient for Euro\*STRONG is 0.0087 and also highly significant. Hence, estimation results indicate that firms in both financial weak and strong EMU countries improved profitability.

Estimation results for efficiency proxies indicate that efficiency declined, similar to results reported in Table 2. The coefficient in regression with SALEFF for Euro\*WEAK is estimated -0.0546 and significant at 10%, the coefficient for Euro\*STRONG is -0.0892 and significant at 1%. There is no evidence of changes in net income efficiency NIEFF related to the Euro. Thus, the hypothesis that sales efficiency will improve is rejected, and the result is stronger for financially stable countries such as Austria, Belgium, France, Germany, and the Netherlands. One possible explanation for the effect is greater degree of competition, another explanation may be related to the fact that firms on average hired more workers and even if real output increased, the declining marginal returns to scale resulted in lower sales efficiency.

Analysis of capital expenditures offers an interesting finding. While capital expenditures significantly decreased for strong countries, I find no change in firm investment in the weak countries. For example, the coefficient for Euro\*STRONG is estimated at -1.4267 and significant at 1% level in the regression with CETA as the dependent variable, the coefficient for Euro\*WEAK is -0.1080 and insignificant. It appears that firms in more financially stable countries either are lacking funds to invest or do not have good investment opportunities after financial liberalization, while firms in financially “weak” countries do not have such problems. I interpret this result as evidence of increased competition in the markets of “strong” countries due to increased supply of goods and services from the “weak” countries.

Table 3 Panel B presents estimation results for equation (2) for proxies representing real output, employment, leverage, dividends and Tobin’s Q. The regression for real output SALR shows that firms in the weak countries display a decline in output after the Euro, since the estimated coefficient for Euro\*WEAK is -0.5601 and significant at 10% level. On the contrary, the coefficient for Euro\*STRONG is 0.9802 and significant at 1% level. This indicates that firms

in the “strong” countries increased their output, while firms in the “weak” countries decreased real sales. Hence, the hypothesis that liberalization will increase firm output is supported only for financially stable countries.

**TABLE 3**  
**THE INTRODUCTION OF THE EURO, FINANCIAL STABILITY, AND FIRM PERFORMANCE**

**Panel A. Profitability, efficiency, and investment.**

Variable	ROS	ROA	ROE	SALEFF	NIEFF	CESA	CETA
Intercept	0.437*** (0.000)	0.2136*** (0.000)	0.3897*** (0.000)	0.4997 (0.397)	-138.9779 (0.278)	-1.1775 (0.336)	-12.479*** (0.043)
LEV <sub>t-1</sub>	0.0030 (0.872)	-0.0497*** (0.000)	-0.0716*** (0.000)	-0.2973* (0.083)	0.0154 (0.999)	-0.0171 (0.973)	-0.8786 (0.259)
LOG(TA <sub>t-1</sub> )	-0.033*** (0.000)	-0.0144*** (0.000)	-0.0268*** (0.000)	0.0463 (0.307)	11.0397 (0.253)	0.1601* (0.072)	1.0471** (0.029)
SDS	-0.0001 (0.765)	-0.0001 (0.188)	-0.0002 (0.234)	-0.0056 (0.285)	0.0307 (0.371)	0.0035*** (0.007)	-0.0028 (0.350)
Euro *WEAK	0.0100* (0.053)	0.0069*** (0.000)	0.0245*** (0.000)	-0.0546* (0.087)	-8.4837 (0.319)	0.5417 (0.254)	-0.1080 (0.774)
Euro *STRONG	0.0159*** (0.000)	0.0087*** (0.000)	0.0107*** (0.006)	-0.0892*** (0.000)	-26.911 (0.267)	-0.2343* (0.096)	-1.4267*** (0.002)
GDPG	0.0011 (0.112)	0.0014*** (0.000)	0.0062*** (0.000)	-0.0029 (0.708)	0.1906 (0.893)	0.1087 (0.300)	0.2534** (0.044)
SRATE	-0.0012 (0.296)	-0.0018*** (0.000)	0.0028*** (0.003)	0.0383** (0.015)	-0.1515 (0.955)	0.1559*** (0.002)	0.2099*** (0.001)
TS	0.0017 (0.144)	-0.0001 (0.780)	0.0020** (0.042)	0.0239 (0.102)	0.8644 (0.706)	0.0593 (0.315)	0.1841* (0.069)
Firm effects	YES	YES	YES	YES	YES	YES	YES
Year effects	YES	YES	YES	YES	YES	YES	YES
Adj. R2	0.5881	0.5157	0.4601	0.6363	-0.0870	0.7077	0.5862
Years	24	24	24	24	24	24	24
Firms	4554	4577	4540	3210	3191	3039	3071
Obs.	37268	37034	36224	33011	32713	31110	31064

The numbers in parentheses are coefficient p-values, \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1%-levels, respectively.

Estimation results for the number of employees indicate that employment increased for both “weak” and “strong” countries. The average increase in employment for “weak” countries is estimated by the coefficient for Euro\*WEAK, which is 756.8844 and highly significant. I obtain a similar result for the “strong” countries, the coefficient for Euro\*STRONG is 1531.125 and significant. Therefore, the hypothesis that liberalization should hurt workers is strongly rejected for both financially unstable and solid countries, while the positive effect of financial liberalization for the “strong” countries is twice as large as that for the “weak” countries.

Test results for leverage indicate that firms in financially weak countries increased leverage, while firms in the strong countries did not. The estimated coefficient for Euro\*WEAK is 0.0066 and significant at 5% level, while the coefficient for Euro\*STRONG is insignificant. This result

provides additional evidence supporting the hypothesis that the leverage should increase because Euro will stabilize cash flows for firms, and the evidence from countries that used to have less stable currencies underscore that this is the likely scenario.

Examination of regression results for dividend payout proxies DIVSAL and PAYOUT reveal another interesting result. The coefficient for Euro\*WEAK is positive and significant for DIVSAL, while the coefficients for Euro\*STRONG are negative and significant for both DIVSAL and PAYOUT. Thus, I find evidence that supports the hypothesis that the Euro will result in larger dividends, but only for the weak countries.

**TABLE 3**  
**THE INTRODUCTION OF THE EURO, FINANCIAL STABILITY,**  
**AND FIRM PERFORMANCE. (CONTINUED)**

**Panel B. Output, employment, leverage, dividends and Tobin's Q.**

Variable	SALR	EMPLOYEES	LEV	DIVSAL	PAYOUT	TOBINSQ
Intercept	-64.0328*** (0.000)	-24495.69*** (0.000)	-0.1737*** (0.000)	-0.0003 (0.943)	0.0108 (0.807)	2.9061 (0.253)
LEV <sub>t-1</sub>	-3.6927 (0.104)	167.0541 (0.424)	0.5848*** (0.000)	-0.0264*** (0.000)	-0.2582*** (0.000)	-4.6245*** (0.006)
LOG(TA <sub>t-1</sub> )	5.6652*** (0.000)	2268.901*** (0.000)	0.0200*** (0.000)	0.0018*** (0.000)	0.0276*** (0.000)	-0.9800*** (0.008)
SDS	-0.0343 (0.178)	4.9452*** (0.000)	0.0002*** (0.005)	0.0000 (0.144)	0.0001 (0.558)	-0.0053** (0.021)
Euro*WEAK	-0.5601* (0.057)	756.8844*** (0.000)	0.0066** (0.014)	0.0018** (0.020)	0.0173 (0.220)	-1.8322* (0.072)
Euro*STRONG	0.9802*** (0.007)	1531.125*** (0.000)	0.0029 (0.142)	-0.0018*** (0.007)	-0.0316*** (0.001)	0.3989 (0.377)
GDPG	0.2387 (0.135)	48.3799*** (0.001)	-0.0033*** (0.000)	0.0007* (0.077)	0.0026 (0.129)	0.3815*** (0.001)
SRATE	-0.1037 (0.467)	5.2100 (0.902)	0.0024*** (0.000)	0.0002 (0.396)	-0.0068** (0.031)	2.3153** (0.014)
TS	-0.4879* (0.055)	-16.1288 (0.722)	0.0016** (0.013)	0.0003 (0.226)	-0.0071** (0.036)	1.0407 (0.147)
Firm effects	YES	YES	YES	YES	YES	YES
Year effects	YES	YES	YES	YES	YES	YES
Adj. R2	0.8721	0.9153	0.7999	0.7112	0.3119	-0.0094
Years	24	24	24	24	24	24
Firms	3480	4489	4652	4582	4612	4548
Obs.	32535	36211	39147	37513	35233	36004

The numbers in parentheses are coefficient p-values, \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1%-levels, respectively

Estimation of equation (2) for Tobin's Q as the dependent variable reveals that countries with strong currencies did not experience any changes in market valuations for companies, as estimated by the coefficient for Euro\*STRONG. On the other hand, the coefficient for Euro\*WEAK is estimated -1.8322 and significant at 10%. Overall, it appears that firms in all countries received some benefits from the common currency. Furthermore, countries with stable

currencies experienced greater benefits from the Euro compared to countries with weak currencies.

### **Industry Effects**

To examine the effect of the Euro on firm performance in different industry sectors, I estimate equation (3), which includes dummy variables for industry sectors such as: Oil & Gas, Basic Materials, Industrials, Consumer Goods, Health Care, Consumer Services, Telecommunications, Utilities, Financials, and Technology. Estimation results for profitability, efficiency, and investment measures are presented in Panel A of Table 4. Test results indicate significant increases in profitability for Oil & Gas, Basic Materials, Industrials, Health Care, Consumer Services, Telecommunications, Utilities, and Financials, and significant decreases for Technology, after controlling for firm and year fixed effects, firm characteristics and country economic indicators. For example, the estimated increase in ROS for Basic Materials industry sector is 0.0096 and significant at 5% level.

I find significant efficiency changes in different industries after liberalization, and most of the changes take place in sales per employee measure SALEFF. Industry sectors Oil & Gas, Telecommunications, and Utilities display significant increases in SALEFF. For example, in the regression with SALEFF as the dependent variable, the coefficient for Telecommunications is estimated 0.3311 and significant at 1% level. For industry sectors Industrials, Consumer Goods, Health Care, Consumer Services, and Technology the tests show significant decreases in real sales per employee.

Test results for investment changes also show cross sectional variation in CESA and CETA. Industry sectors Oil & Gas, Telecommunications, and Utilities display increases in investment. For example, the coefficient for Oil & Gas in the regression for CETA is 0.454 and significant at 1% level. On the other hand, sectors such as Consumer Services and Financials display significant decreases in investment.

Next, consider changes in output, employment, leverage, dividends and Tobin's Q presented in Panel B of Table 4. Evidence suggests that real sales (SALR) increased in Basic Materials, Consumer Goods, and Utilities, after controlling for firm and country characteristics, as well as fixed firm and year effects. For example, the coefficient for Consumer Goods is 1.1439 and highly significant. I also find significant decreases in real sales for Financials. This result is expected, because implementation of the common currency means no revenues from currency exchange services for financial institution.

Most industry sectors display increases in the number of employees after the Euro. For sectors Oil & Gas, Basic Materials, Industrials, Consumer Goods, Health Care, Consumer Services, Financials, and Technology, the estimated coefficient for  $I_k^*$  Euro is positive and significant. For example, this coefficient for sector Industrials is estimated 1241.165 and significant at 1% level. The only exception is Telecommunications, which has a negative and very large in absolute value coefficient, indicating that firms in this sector laid off a large number of employees. I conjecture that this is due to technological change and innovation in the Telecommunications sector in recent years, and not the effect of the Euro.

Estimated changes in leverage (LEV) for sectors Industrials, Telecommunications, and Technology are positive. For example, the coefficient for Industrials is 0.0083 and highly significant. There are no industry sectors with decreases in leverage. This provides further support for the hypothesis that leverage should increase because of more stable cash flows that are no longer subject to exchange rate fluctuations.

I find evidence of cross sectional variation in dividend policies after introduction of the Euro. Firms in Utilities sector display a significant increase in DIVSAL. Firms in Consumer Goods, Financials, and Technology sectors display decreases in dividend payments. For example, the estimated coefficient for Consumer Goods is -0.002 and significant at 5% level in the regression with DIVSAL as the dependent variable.

**TABLE 4**  
**THE INTRODUCTION OF THE EURO AND FIRM PERFORMANCE:**  
**INDUSTRY EFFECTS**

**Panel A. Profitability, efficiency, and investment.**

Variable	ROS	ROA	ROE	SALEFF	NIEFF	CESA	CETA
Intercept	0.4486*** (0.000)	0.2183*** (0.000)	0.411*** (0.000)	0.5173 (0.385)	-164.7667 (0.247)	-1.3167 (0.277)	-13.59*** (0.037)
Oil & Gas	0.0824** (0.033)	0.0385*** (0.000)	0.085*** (0.000)	0.209*** (0.001)	-6.3109 (0.332)	0.454*** (0.005)	0.3835 (0.166)
Basic Materials	0.0096** (0.047)	0.0126*** (0.000)	0.029*** (0.000)	-0.0187 (0.584)	-60.9232 (0.257)	0.1596 (0.228)	-0.3804 (0.321)
Industrials	0.0109*** (0.006)	0.0062*** (0.001)	0.0072 (0.136)	-0.0842*** (0.006)	-2.6544 (0.347)	0.2652 (0.184)	-0.1601 (0.404)
Consumer Goods	0.0012 (0.778)	0.0023 (0.254)	-0.0022 (0.702)	-0.1017*** (0.000)	0.5417 (0.843)	0.1860 (0.397)	0.1947 (0.406)
Health Care	0.0172** (0.010)	0.0123*** (0.006)	0.029*** (0.003)	-0.0918*** (0.003)	-5.8271 (0.289)	-0.0419 (0.771)	-0.3930 (0.119)
Consumer Services	0.0103** (0.036)	0.0097*** (0.000)	0.013*** (0.065)	-0.1958*** (0.000)	-5.9521 (0.177)	-0.65*** (0.066)	-0.905*** (0.024)
Telecommunications	0.0321* (0.076)	0.0104 (0.262)	0.0329 (0.270)	0.3311*** (0.000)	-18.2193 (0.249)	0.4344** (0.032)	-0.7446 (0.187)
Utilities	0.0408*** (0.000)	0.0236*** (0.000)	0.066*** (0.000)	0.1329** (0.019)	-7.3116 (0.176)	0.3151* (0.082)	-0.1298 (0.496)
Financials	0.0396*** (0.000)	0.0156*** (0.000)	0.041*** (0.000)	-0.0448 (0.255)	-109.1694 (0.383)	-2.03** (0.024)	-8.494*** (0.004)
Technology	-0.0176** (0.016)	-0.021*** (0.000)	-0.07*** (0.000)	-0.2044*** (0.000)	-8.1629*** (0.065)	1.2268 (0.472)	0.0380 (0.981)
Control variables	YES	YES	YES	YES	YES	YES	YES
Firm effects	YES	YES	YES	YES	YES	YES	YES
Year effects	YES	YES	YES	YES	YES	YES	YES
Adj. R2	0.5883	0.5163	0.4615	0.6363	-0.0872	0.7078	0.5881
Years	24	24	24	24	24	24	24
Firms	4554	4577	4540	3210	3191	3039	3071
Obs.	37268	37034	36224	33011	32713	31110	31064

The numbers in parentheses are coefficient p-values, \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively

**TABLE 4**  
**THE INTRODUCTION OF THE EURO AND FIRM PERFORMANCE:**  
**INDUSTRY EFFECTS (CONTINUED)**

**Panel B. Output, employment, leverage, dividends and Tobin's Q.**

Variable	SALR	EMPLOYEES	LEV	DIVSAL	PAYOUT	TOBINSQ
Intercept	-64.9521*** (0.000)	-24861.38*** (0.000)	-0.1727*** (0.000)	0.0014 (0.696)	0.0134 (0.758)	0.6241 (0.784)
Oil & Gas	-0.2629 (0.610)	1969.116*** (0.001)	0.013** (0.045)	0.0002 (0.914)	-0.0021 (0.937)	3.5211*** (0.003)
Basic Materials	1.253*** (0.000)	425.5039*** (0.005)	-0.0007 (0.867)	0.0009 (0.154)	0.0147 (0.521)	0.3950 (0.446)
Industrials	0.0268 (0.884)	1241.165*** (0.000)	0.0083*** (0.001)	-0.0009 (0.226)	-0.0205 (0.203)	-1.7544 (0.112)
Consumer Goods	1.1439*** (0.000)	1908.553*** (0.000)	0.0010 (0.708)	-0.002** (0.016)	-0.0088 (0.434)	0.9701*** (0.009)
Health Care	-0.0345 (0.909)	1464.49*** (0.000)	-0.0111 (0.149)	-0.0012 (0.373)	-0.0159 (0.557)	-0.0249 (0.948)
Consumer Services	0.0164 (0.952)	2025.13*** (0.000)	0.0048 (0.257)	0.0004 (0.617)	0.0202 (0.236)	1.5965*** (0.002)
Telecommunications	-0.3310 (0.763)	-33884.94** (0.016)	0.0309*** (0.001)	0.0088 (0.164)	-0.1299 (0.191)	-81.2751* (0.062)
Utilities	17.0939** (0.037)	-205.5710 (0.757)	0.0051 (0.336)	0.0068*** (0.001)	-0.0258 (0.301)	2.1031*** (0.008)
Financials	-1.3251*** (0.001)	422.3825* (0.073)	0.0005 (0.891)	-0.0005 (0.835)	-0.0501*** (0.000)	1.2444*** (0.003)
Technology	-0.4238 (0.206)	2744.941*** (0.000)	0.0135* (0.069)	-0.0064*** (0.000)	-0.0558*** (0.002)	0.0953 (0.757)
Control variables	YES	YES	YES	YES	YES	YES
Firm effects	YES	YES	YES	YES	YES	YES
Year effects	YES	YES	YES	YES	YES	YES
Adjusted R2	0.5883	0.5163	0.4615	0.6363	0.3119	-0.0010
Years	24	24	24	24	24	24
Firms	3480	4489	4652	4582	4612	4548
Obs.	32535	36211	39147	37513	35233	36004

The numbers in parentheses are coefficient p-values, \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

Different industry sectors vary in their changes of market valuations for firms after the Euro. The estimated coefficients for Tobin's Q regression are positive for sectors Oil & Gas, Consumer Goods, Consumer Services, Utilities, and Financials. For example, the coefficient for Financials is 1.2444 and significant at 1% level. This is a surprising result because financial institutions lost revenues from currency exchange services. A possible interpretation for the result is that financial institutions must have found other sources of revenues. Firms in Telecommunications sector display a large decrease in Tobin's Q, the coefficient is -81.2751 and significant at 1% level. Overall, the estimated effect of the Euro is positive for many industry sectors.

**TABLE 5**  
**THE INTRODUCTION OF THE EURO AND FIRM PERFORMANCE:**  
**COUNTRY EFFECTS**

**Panel A. Profitability, efficiency, and investment.**

Variable	ROS	ROA	ROE	SALEFF	NIEFF	CESA	CETA
Intercept	0.4345*** (0.000)	0.211*** (0.000)	0.3839*** (0.000)	0.4763 (0.424)	-139.4963 (0.280)	-0.3333 (0.776)	-12.4427* (0.055)
Austria	0.0397*** (0.000)	0.0246*** (0.000)	0.0392*** (0.000)	-0.0944*** (0.009)	1.1306 (0.752)	0.0825 (0.621)	-0.0766 (0.681)
Belgium	0.0417*** (0.009)	0.0158*** (0.000)	0.0372*** (0.000)	-0.0501 (0.398)	-0.0100 (0.998)	-2.9306** (0.044)	-4.91*** (0.000)
Finland	0.0237*** (0.000)	0.0143*** (0.000)	0.0283*** (0.000)	-0.0390 (0.301)	1.2119 (0.797)	-0.3702** (0.026)	-0.0737 (0.738)
France	0.014*** (0.001)	0.01*** (0.000)	0.0202*** (0.000)	-0.1244*** (0.000)	-24.1600 (0.221)	0.2017* (0.090)	-0.1920 (0.425)
Germany	0.0173*** (0.000)	0.0104*** (0.000)	0.0055 (0.346)	-0.0358 (0.207)	-41.6016 (0.431)	-0.3049** (0.021)	-0.9156*** (0.009)
Greece	-0.0722*** (0.000)	-0.0269*** (0.000)	-0.0459*** (0.000)	-0.1386* (0.057)	-57.6750 (0.230)	-1.3114 (0.106)	-0.4894 (0.167)
Ireland	0.2017 (0.143)	0.0220 (0.258)	0.0149 (0.688)	-0.0289 (0.837)	16.8591 (0.483)	0.1462 (0.543)	-0.9192* (0.098)
Italy	0.013** (0.040)	0.0085*** (0.000)	0.0363*** (0.000)	-0.0419 (0.542)	-3.2390 (0.642)	-0.4192 (0.236)	-0.4452 (0.233)
Netherlands	0.0163*** (0.002)	-0.0036 (0.232)	-0.0122 (0.249)	-0.1689*** (0.000)	-3.9309 (0.336)	0.5484** (0.025)	-5.0599 (0.111)
Portugal	0.0297*** (0.001)	0.0204*** (0.000)	0.0388** (0.017)	-0.0399 (0.468)	4.3076 (0.696)	0.2955 (0.294)	-0.2103 (0.624)
Spain	0.0312*** (0.000)	0.0201*** (0.000)	0.0654*** (0.000)	-0.0672 (0.119)	0.6557 (0.938)	4.8909* (0.059)	1.0495 (0.576)
Control variables	YES	YES	YES	YES	YES	YES	YES
Firm effects	YES	YES	YES	YES	YES	YES	YES
Year effects	YES	YES	YES	YES	YES	YES	YES
Adjusted R2	0.5885	0.5162	0.4609	0.6362	-0.0873	0.7082	0.5868
Years	24	24	24	24	24	24	24
Firms	4554	4577	4540	3210	3191	3039	3071
Obs.	37268	37034	36224	33011	32713	31110	31064

The numbers in parentheses are coefficient p-values, \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1%-levels, respectively.



**TABLE 5**  
**THE INTRODUCTION OF THE EURO AND FIRM PERFORMANCE:**  
**COUNTRY EFFECTS (CONTINUED)**

<b>Panel B. Output, employment, leverage, dividends and Tobin's Q.</b>						
Variable	SALR	EMPLOYEES	LEV	DIVSAL	PAYOUT	TOBINSQ
Intercept	-64.6254*** (0.000)	-23970.7*** (0.000)	-0.172*** (0.000)	0.0002 (0.947)	0.0210 (0.636)	4.1879 (0.125)
Austria*Euro	-1.0212* (0.057)	937.527*** (0.000)	-0.0045 (0.410)	0.0024** (0.021)	-0.1954** (0.019)	-2.3614** (0.010)
Belgium*Euro	0.6330 (0.108)	-43.2083 (0.791)	-0.0090* (0.075)	0.0022 (0.718)	-0.0015 (0.937)	0.7345 (0.138)
Finland*Euro	0.0522 (0.912)	1296.725*** (0.000)	-0.031*** (0.000)	0.0135*** (0.000)	0.1908*** (0.000)	-0.3400 (0.593)
France*Euro	2.1949*** (0.002)	2491.477*** (0.000)	0.0032 (0.219)	-0.0042*** (0.000)	0.0059 (0.524)	1.7012*** (0.002)
Germany*Euro	1.0086** (0.029)	597.8062*** (0.000)	0.0042 (0.130)	-0.0012** (0.024)	-0.0562*** (0.000)	-0.1464 (0.810)
Greece*Euro	-1.3724** (0.012)	-310.074*** (0.000)	0.0058 (0.343)	-0.003** (0.023)	-0.088*** (0.010)	-0.8592*** (0.000)
Ireland*Euro	-1.0390 (0.341)	586.4979 (0.208)	-0.0070 (0.562)	-0.0014 (0.353)	0.0225 (0.318)	3.3586*** (0.007)
Italy*Euro	0.1759 (0.722)	604.4864** (0.030)	0.0192*** (0.000)	-0.0041*** (0.000)	-0.0463** (0.014)	-4.8211** (0.045)
Netherlands*Euro	-1.0669** (0.013)	3486.274*** (0.000)	0.0115*** (0.008)	-0.0001 (0.925)	0.0217* (0.089)	-0.3628 (0.608)
Portugal*Euro	-0.9479 (0.116)	223.1209 (0.254)	0.029* (0.066)	0.0141 (0.163)	0.0506 (0.803)	1.4028* (0.051)
Spain*Euro	-2.113*** (0.004)	1484.25*** (0.000)	0.0334*** (0.000)	0.0000 (0.999)	0.0006 (0.965)	1.7489** (0.010)
Control variables	YES	YES	YES	YES	YES	YES
Firm effects	YES	YES	YES	YES	YES	YES
Year effects	YES	YES	YES	YES	YES	YES
Adjusted R2	0.8720	0.9162	0.8004	0.7125	0.3161	-0.0091
Years	24	24	24	24	24	24
Firms	3480	4489	4652	4582	4612	4548
Obs.	32535	36211	39147	37513	35233	36004

The numbers in parentheses are coefficient p-values, \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1%-levels, respectively.

### Robustness Tests

To test the robustness of the findings, I examine the sensitivity of the results to the choice of the time frame, as well as the event year. I use an alternative time frame 1994-2004 (five years before and five years after the event), and obtain similar results. In the subsequent test, I use 2000 as the event year and find results similar to those reported here. When I use 1997 as the event year, the results are stronger, for example a change in Tobin's Q is positive and significant at 5% level for "strong" countries and negative and significant at 10% level for "weak"

countries. In addition, when liberalization effects are estimated for individual countries, the conclusions are similar except in several countries dividends and Tobin's Q increased, as presented in Table 5. Thus, these results support earlier conclusions with respect to changes in firm performance.

Next, I consider the effect of estimation technique on the results. While least squares regression models conditional mean, quantile regression is a method that models conditional quantile of the distribution, for example it allows to model conditional median (50th percentile) of the distribution. The median is a better measure of the center of the distribution because it is less sensitive to outliers in the data, see Koenker and Bassett (1978). When I use quantile regression, I obtain similar results. The robustness test results are not presented here but are available upon request. Overall, these tests show that the results are robust.

## CONCLUSION

This paper examines the effect of the European liberalization process on firm performance by estimating the fixed time and firm effects panel regression model for the period 1980-2006. I use an empirical model that incorporates both company and country characteristics, and evaluate the effect of the common currency on performance of the European companies by estimating the coefficient for a dummy variable that takes value of 1 after introduction of the Euro. I examine the effect of the common currency in a sample of eleven EMU (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain) and five non-EMU (Denmark, Norway, Sweden, Switzerland, and the UK) countries to analyze whether the changes in firm performance differ across countries that implemented the Euro from those that retained their own currencies.

This study results in several important findings. First, I document that firm profitability increases in the EMU countries after introduction of the Euro, including countries that used to have strong and weak currencies prior to adoption of the common currency. Furthermore, tests show that firms in almost all industry sectors display improvements in profitability, and individual country analysis suggests improvements in profitability in majority of EMU countries. This finding is in line with the theories suggesting that liberalization should improve firm performance.

Second, I find that average firm efficiency declines for the EMU countries after the Euro. In addition, I detect reduction in average firm investment for the EMU countries, especially for countries with previously more stable currencies. Industry and country level analysis reveals cross sectional variation in efficiency and investment changes. This evidence is compatible with theories that predict greater competition after liberalization.

Third, I find strong evidence of increases in real output for firms in most EMU countries and in most industry sectors. Similarly, a lot of empirical evidence points that firms in the EMU countries hired more workers after liberalization. These findings are in agreement with proponents of liberalization suggesting that it should spur economic growth. Furthermore, the fears that liberalization should hurt workers have very little empirical support.

Finally, I find evidence of cross-sectional variation in the effect of the Euro on dividend policies and market valuation. The firms on average decreased dividends. However, firms in the countries that used to have weak currencies, and firms in several industry sectors increased dividends after the Euro. I also find similar variation for changes in Tobin's Q.

I conduct several robustness tests with different even year, time frame, and estimation techniques. The main findings remain essentially the same. Overall, the evidence indicates that the liberalization process in Europe improved firm performance in countries. In addition, the countries which had stable currencies prior to the introduction of the Euro received larger benefits from liberalization.

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