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Abstract

The hypotheses of sectoral incremental rates of returns gravitating around or converging towards a common value are tested on data for various OECD countries relying on an econometric method able to account for residual autocorrelation and cross-sector correlation. Our null hypotheses receive only a mixed empirical support. This is interpreted as the result of limitations to capital mobility and of persistent differentials in the innovative performance of industries.

Keywords: capital mobility, gravitation, convergence, incremental rates of returns, SURE estimation, exactly median unbiased estimator

JEL Codes: L16, L19, L60, L70, L80, L90, B51, B52

Introduction

In the classical view, the returns on capital of different economic sectors tend to be equalized in a dynamic and turbulent fashion (Shaikh, 1980; Tsoulfidis and Tsaliki, 2005). After D'Orlando (2007) it is necessary to make concepts clearer, distinguishing between *convergence* and *gravitation*. On one side, we define "*convergence* towards long-period positions" as "the movement of actual magnitudes towards their long-period counterparts" driven by the mobility of capital. In other words, we make reference to a situation where industry profit rates initially differ, but they tend to collapse towards a common value. On the other, we term *gravitation* as "the random oscillation of actual magnitudes around their long-period counterparts". Convergence is therefore a prerequisite for gravitation.

A large empirical literature has focused on these issues, by considering the dynamics of profit-capital rates at the industry level in various countries. Some studies relying on descriptive statistics have supported the gravitation hypothesis (Duménil and Lévy, 2002; Duménil and Lévy, 2004), however, when resorting to econometric testing, such support faded (Glick and Ehrbar, 1988; Glick and Ehrbar, 1990; Zacharias, 2001). A considerable degree of persistence in profit rate differentials was also found by studies in the "persistence of profit" (POP) literature at either the industry or the firm level (see among others Mueller, 1986 and 1990; Glen, Lee and Singh, 2001, 2003; Gschwandtner 2003, 2005; Goddard and Wilson, 1999).

In this context, Shaikh (1995), Tsaliki and Tsoulfidis (2005) and Shaikh (2008) advanced the concepts of *regulating capital* and *incremental rate of return* (IROR)[1]. Capital can be termed "regulating" when it embodies "the best-practice methods of production" (Tsaliki and Tsoulfidis, 2005, p. 13) or, otherwise, "the lowest cost methods operating under generally reproducible conditions" (Shaikh, 2008, p. 167). Incremental returns are those that are gained over regulating capitals. According to these authors, the tendential equalization (either convergence or gravitation) of profit rates in different sectors does not take place for average profit rates, but only for incremental ones. This is because individual capitals, accumulated in the past, cannot easily switch to best-practice methods of production, which are adopted only by new capitals flowing into a sector, as a consequence heterogeneous *average* profit rates both within and between sectors exist.

[1] These concepts were applied also by Christodoulopoulos (1995) for OECD countries and Schroeder (2005) for the Asian crisis of the 90s.

Shaikh (1995) proposed to approximate IROR along the following lines. Total current profits (π_t) are composed by profits from the most recent investments ($IROR_t \cdot I_{t-1}$) and profits from all previous investments (π^*):

$$\pi_t = IROR_t \cdot I_{t-1} + \pi^* \quad (1)$$

Subtracting from both sides of (1) profits lagged one period, it is possible to obtain

$$\pi_t - \pi_{t-1} = IROR_t \cdot I_{t-1} + (\pi^* - \pi_{t-1}) \quad (2)$$

At this stage, it is assumed that $\pi^* = \pi_{t-1}$ on the ground that for short term horizons[2] current profits on carried-over vintages of capital goods (π^*) are close to last period's profit on the same capital goods (π_{t-1}). Therefore it is possible to write

$$IROR_t = \frac{\Delta \pi_t}{I_{t-1}} \quad (3)$$

where Δ is the first-difference operator.

In the present paper, we show a new econometric method to test the hypotheses of convergence and gravitation of IRORs in the industries of several OECD countries, considering economies with different degrees of product market regulations and exposure to international trade as those of Austria, Finland, Italy, the Netherlands, Norway, US and West Germany (Høj et al. 2007). Our method takes better care of residual autocorrelation and cross-sector correlation in profit rates than previous studies in the field did. Moreover, the countries we consider are those with the most complete data in the STAN OECD database, which contains information based on a specific effort to allow cross-industry and cross-country comparability. Our results offer only mixed support to the tendential equalization of sectoral incremental rates of returns in the OECD countries considered.

Data, Model and Econometric Methods

From the OECD STAN database we consider the following variables: Labour compensation of employees (LABR), Total employment – Persons (EMPN), Employees – Persons (EMPE), Gross operating surplus and mixed income (GOPS) and Gross Fixed Capital Formation (GFCF). Similarly to Duménil and Lévy (2002) and Shaikh (2008) among others, we proxy the wage equivalent of the self-employed by labour costs over total employment times the number of the self-employed. In the end, we compute profit for industry *i* at time *t* (π_{it}) as follows

[2] Up to one year according to Shaikh (1995), p. 9.

$$\pi_{it} = GOPS_{it} - \left[\frac{LABR_{it}}{EMPE_{it}} \cdot \left(EMPN_{it} - EMPE_{it} \right) \right] \tag{4}$$

and the corresponding incremental rate of return as

$$IROR_{it} = \frac{\Delta \pi_{it}}{GFCF_{it-1}}$$

where Δ is the first difference operator.

In equation (4), profits are net of taxes and of payments for interest, as captured by financial intermediation services indirectly measured (FISIM).

Our analysis concerns the following sectors: Agriculture, hunting, forestry and fishing; Mining and quarrying; Food products, beverages and tobacco; Textiles, textile products, leather and footwear; Wood and products of wood and cork; Pulp, paper, paper products, printing and publishing; Chemical, rubber, plastics and fuel products; Other non-metallic mineral products; Basic metals and fabricated metal products; Machinery and equipment; Transport equipment; Manufacturing nec; Electricity, gas and water supply; Construction; Wholesale and retail trade, restaurants and hotels; Transport and storage and communication; Financial intermediation. We consider only countries with at least 20 observations to increase our chances to capture long-term features of the data. In the end, for each of the 17 industries considered, we have 32 observations for Austria, 33 for Finland, 37 for Italy, 21 for the Netherlands and West Germany, 36 for Norway, 20 for the US.

Figures 1 to 7 show the time series of industry profit rates for the countries considered. As in Shaikh (2008), incremental rates of return on capital show a marked tendency to cross over each other. Moving to the evolution of their dispersion through time, Figures 8 to 14 show that only for Italy a downward trend emerges, while in the Netherlands and in the US there appears a somewhat upward trend. In the other countries, no clear pattern shows up. In the end descriptive statistics would not clearly reject either the gravitation or the convergence hypotheses. However, we resort to econometric testing in order to provide better evidence on these issues.

After Mueller (1986), we consider a model for profit rates with a nonlinear time trend, allowing, however, shocks to be serially correlated:

$$\widetilde{IROR}_{it} = \alpha_i + \frac{\beta_i}{t} + \frac{\gamma_i}{t^2} + \frac{\delta_i}{t^3} + \varepsilon_{it} \tag{5}$$

$$\varepsilon_{it} = \rho_i \varepsilon_{it-1} + \xi_{it} \tag{6}$$

where $\widetilde{IROR}_{it}$ is the deviation of the profit rate in sector *i* from the cross-sectional mean, ξ_{it} is a stochastic error with a normal distribution with zero mean and variance σ_ξ^2, α_i, β_i, γ_i, δ_i, and ρ_i are parameters to be estimated.

Equation (5) was originally proposed by Mueller (1986, p. 12) in the study of long-run profit rates[3]. It has a number of advantages against other time trend specifications. In the first place, a linear time trend is unrealistic as it would predict a continuous decline in profit rates, even after the attainment of their competitive level. In the second place, a third order polynomial in the inverse of time does not imply that the peak or the trough in profitability occurs in the first time period, allowing two changes in direction for the time-path of profitability. Higher order polynomials might incur into collinearity problems. Mueller (1986) assumed ε_{it} to be white noise, so our specification of (6) has a greater degree of generality.

In order to account for both serial correlation in the disturbance and possible cross-sector correlation we adopt a similar procedure to that proposed by Meliciani and Peracchi (2006). We first estimate (5) separately for each sector. Then we use the exactly median unbiased (EMU) estimator devised by Andrews (1993) to estimate ρ_i and its confidence interval from the residuals of (5). Building on our point estimates of ρ_i, when we find a significant autocorrelation parameter at a 5% level, we apply a feasible GLS transformation on our data to account for serial correlation after Greene (2003)[4] and, finally we implement a SURE estimator on the transformed data to obtain new estimates of α_i, β_i, γ_i and δ_i. At this stage, we test the convergence hypothesis of industry incremental rates of returns which entails

$$\alpha_i=0 \text{ and } \beta_i \text{ or } \gamma_i \text{ or } \delta_i \neq 0 \text{ for all } i \tag{7}$$

and the gravitation hypothesis which implies

$$\alpha_i=\beta_i=\gamma_i=\delta_i=0 \text{ for all } i \tag{8}$$

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[3] In the POP literature it is customary to demean the data of each cross-section of the panel before estimation. We stick to this practice.

[4] See p. 272. Given a generic estimate of ρ_i, $\hat{\rho}_i$, the feasible GLS transformation for a model with an AR(1) disturbance consists in pre-multiplying the vector of observations of the dependent variable and the matrix of observations of independent variables of sector *i* by the matrix below:

$$\begin{bmatrix} \sqrt{1-\hat{\rho}_i} & 0 & \cdots & 0 \\ -\hat{\rho}_i & 1 & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & -\hat{\rho}_i & 1 \end{bmatrix}$$

We test (7) by means of a t-test, while (8) by a Wald test. If we find α_i to be significantly different from 0 for at least one sector, we will interpret this as a sing of absence of convergence and gravitation having the IROR of this sector a constant deviation from the cross-sectional mean. If we find a conflict between the tests for (7) and (8), we will interpret it as a sing of model misspecification. As a consequence, if no coefficient is found to be significantly different from zero, we will decrease the order of the polynomial in (5); otherwise, we will drop insignificant regressors.

Resorting to the estimator by Andrews (1993) is useful because the OLS estimator is well known to be downward biased in small samples (Quenouille, 1956 and Orcutt and Winokur, 1969). Given the OLS estimator of ρ_i, $\hat{\rho}_i$, whose median function is $m(\cdot)$, the EMU estimator of ρ_i is:

$$\tilde{\rho}_i = \begin{cases} 1, & \text{if } \hat{\rho}_i > m(1) \\ m^{-1}(\hat{\rho}_i), & \text{if } m(-1) < \hat{\rho}_i \le m(1) \\ -1, & \text{otherwise} \end{cases} \qquad (9)$$

where $m^{-1}(\cdot)$ is the inverse of $m(\cdot)$ and $m(-1) = \lim_{\rho_i \to -1} m(\rho_i)$. The median of $\hat{\rho}_i$ usually is numerically evaluated on a fine grid of ρ_i values and interpolation is used to obtain $m^{-1}(\cdot)$. In a similar fashion it is possible to obtain the 5th and the 95th quantiles of $\hat{\rho}_i$ and to build a 95% confidence interval of $\tilde{\rho}_i$[5].

Results

Our econometric results are set out in Tables 1 to 9. Tables 1 to 7 show our estimates of (5) and (6) for each of the country we considered. Tables 8 and 9 show our estimates once focusing only on Manufacturing sectors as, in principle, it might provide more favourable results to the gravitation hypothesis or, at least, to the convergence one. This is because after Duménil and Lévy (2002) one might argue that the capital stocks of the Financial intermediation and Wholesale trade sectors are not accurately measured due to the lack of data on the variations of financial net worth and inventories. Further, Agricultural and Construction activities might have a too large share of individual businesses, which might not respond to profit rate differentials due to either lack of information or absence of a profit maximizing behaviour. Finally, Mining, Transport and Electricity activities might be

[5] An extension of this estimator to the AR(p) case, with p being the number of lags, is provided in Andrews and Chen (1994). The EMU estimator requires prior knowledge on the distribution of ξ_{it}, however Andrews (1993) showed that assuming it to be normal produces results robust to various non-normal distributions. One further assumption is $m(\cdot)$ to be continuous and strictly increasing.

characterized by oligopolistic or monopolistic market structures to a greater extent than Manufacturing industries.

A common results to all the countries considered is the absence of high serial correlation in the residuals as the there is no trace of unit roots in them.

Signs of model misspecification show up in some of the sectors considered. Once re-specifying (5) as described above, it is possible to obtain the results set out in Tables 1 to 7. Lack of either convergence or gravitation was found in Austria, Italy, the Netherlands, Norway and the US, while in West Germany IRORs would appear to have gravitated around their mean and in Finland to be on converging trends.

Focusing only on manufacturing sectors would increase the evidence in favour of the tendential equalization of IRORs, but lack of either convergence or gravitation still shows up in at least one sector in Austria, the Netherlands and the US (Table 8). In Finland and Norway, IRORs were gravitating around their cross-sectional means, while in Italy and West Germany they were on converging trends.

Conclusions

In the present work, we have tested the hypothesis of the tendential equalization of incremental rates of returns – being it their convergence or gravitation - in the economic sectors of several OECD countries, by an econometric method able to properly account for residual autocorrelation and cross-unit correlation. We only found a mixed support for our null hypotheses. We interpret this as the result of limitations to capital mobility across sectors, which might have different sources.

Duménil and Lévy (1993, pp 69-73), presenting classical economists' thought, write that capital mobility among economic sectors can take two forms, either firms' entry-exit decisions - Marx and Smith's view - or credit flows - Ricardo's view. We know that both these mechanisms are not as smooth as one in principle could expect. On the one hand, sunk costs and uncertainty are known to curb firms' movements in and out a given market (Dixit, 1989; Cabral, 1995; Lambson, 1991 and 1992). In this context the persistent ability of firms in a given industry to undertake strategic investment leading to innovation or to an increase in their market share might boost their relative profit rate for a long period of time (Lee and Mahmood, 2009, Pianta and Tancioni, 2007, Geroski et al. 1993, Dosi, 2007). On the other, capital market imperfections are a pervasive phenomenon, whereby, for instance, the structure of a given industry in terms of firm size might curb capital mobility given that small firms tend to have less collateral and, therefore, less creditworthiness (Schiantarelli, 1995).

Duménil and Lévy (1993)[6] showed by means of numerical simulations that limitations to capital mobility can produce highly persistent deviations in industry profit rates. Inspecting their results it is possible to infer that, observing industry profit rates for periods of 20-50 years, one might find a pattern very similar to the one emerged for some of the countries analysed in the present work, namely that profit rates do not gravitate and they tend to follow trends which might or might not converge. Under this perspective, the results contained in the present work might not be considered per se as an empirical challenge to the theory of the equalization of profit rates and, as a consequence, of the relevance of the prices of production, as it would be necessary to have data for a much longer time span than that usually considered in the literature to observe tendential equalization, which, in its own, could be only one of the forces that affect the dynamics of industry profit rates. Sunk costs, uncertainty, capital market imperfections and innovation trajectories are very likely to have a role as well.

Bibliography

[1] Andrews, D. and H. Y. Chen (1994). "Approximately Median Unbiased Estimation of Autoregressive Models", *Journal of Business and Economic Statistics*, Vol. 12, pp. 187-204.

[2] Andrews, D. W. K. (1993), "Exactly median unbiased estimation of first order autoregressive unit root models", Econometrica 61: 139-165.

[3] Cabral, L. (1995), Sunk costs, firm size and firm growth. Journal of Industrial Economics 43 (2), 161–172.

[4] Christodoulopoulos, G. (1995), "International Competition and Industrial Rates of Return", Department of Economics, New School for Social Research, New York.

[5] D'Orlando, F. (2007), "A methodological note on long-period positions", Contributions to Political Economy 26: 17-26.

[6] Dixit, A., 1989. Entry and exit decisions under uncertainty. Journal of Political Economy 97 (3), 620–638.

[7] Dosi, G. (2007), "Statistical Regularities in the Evolution of Industries. A Guide through some Evidence and Challenges for the Theory", in Malerba, F. and S. Brusoni, eds., *Perspectives on Innovation*, Cambridge University Press, Cambridge, UK, 153-186.

[6] See p. 155.

[8] Duménil, G., and D. Lévy (1993), *The economics of the profit rate: Competition, crises, and historical tendencies in capitalism*, Edward Elgar, Aldershot, England.

[9] Duménil, G. and D. Lévy (2002), "The field of capital mobility and the gravitation of profit rates (USA 1948–2000)", Review of Radical Political Economics 34, 417–436.

[10] Duménil, G. and D. Lévy (2004), "The Real and Financial Components of Profitability (United States, 1952–2000) Review of Radical Political Economics 36, 82-110.

[11] Geroski P.A., Machin S., and J. Van Reenen (1993), "The Profitability of Innovating Firms", RAND Journal of Economics, 24(2), pp. 198-211.

[12] Glen, J., K. Lee and A. Singh (2001), "Persistence of profitability and competition in emerging markets", Economics Letters, 72, pp. 247–53.

[13] Glen, J., K. Lee and A. Singh (2003), "Corporate profitability and the dynamics of competition in emerging markets: a time-series analysis", The Economic Journal, 113, F465–F484.

[14] Glick, M. and H. Ehrbar (1988), "Profit Rate Equalization in the U.S. and Europe: An Econometric Investigation", European Journal of Political Economy, 4, 179-201

[15] Glick, M. and H. Ehrbar (1990), "Long-run Equilibrium in the Empirical Study of Monopoly and Competition", Economic Inquiry, 28, 151-162.

[16] Goddard, J. A. and J. O. S. Wilson (1999) The persistence of profit: a new empirical interpretation, International Journal of Industrial Organization, 17, 663–87.

[17] Greene, W. H. (2003), *Econometric Analysis*, Prentice Hall, Upper Saddle River, New Jersey.

[18] Gschwandtner, A. (2003) Profit persistence in the US: evidence from a new dataset, mimeo, University of Vienna, Vienna, Austria.

[19] Gschwandtner, A. (2005) Profit persistence in the 'very' long run: evidence from survivors and exiters, Applied Economics, 37, 793–806.

[20] Høj, J., Jimenez, M., Maher, M., Nicoletti, G. and M. Wise (2007), "Product market competition in the OECD countries", OECD Economics Department, Working Paper 575.

[21] Lambson, V., 1991. Industry evolution with sunk costs and uncertain market conditions. International Journal of Industrial Organization 9 (2), 171–196.

[22] Lambson, V., 1992. Competitive profits in the long run. Review of Economic Studies 59, 125–142.

[23] Lee, C.-Y. and I. P. Mahmood (2009), "Inter-industry differences in profitability: the legacy of the structure–efficiency debate revisited", Industrial and Corporate Change, 18: 351-380.

[24] Meliciani, V. and F. Peracchi (2006), "Convergence in per-capita GDP across European regions: a reappraisal", Empirical Economics, 31, 549-568.

[25] Mueller, D. 1986. Profits in the Long Run. Cambridge, U.K.: Cambridge University Press.

[26] Mueller, D.(ed) 1990. The Dynamics of Company Profits. Cambridge, U.K.: Cambridge University Press.

[27] Orcutt, G. H. and H. S. Winokur (1969), "First order autoregressions: inference, estimation and prediction", Econometrica 37: 1-14.

[28] Pianta, M. and M. Tancioni (2007), "Innovations, wages, and profits", Journal of Post-Keynesian Economics 31: 101-123.

[29] Quenouille, M. H. (1956), "Notes on bias in estimation", Biometrika, 43: 353-360.

[30] Schiantarelli, F., 1996, Financial constraints and investment: methodological issues and international evidence, Oxford Review of Economic Policy, 12, 70-89.

[31] Schroeder, S. K. (2004), "Political economic forecasting of financial crises", Department of Economics, New School for Social Research, New York.

[32] Shaikh, A. (1980), "Marxian competition versus perfect competition: further comments on the so-called choice of technique", Cambridge Journal of Economics 4, 75-83.

[33] Shaikh, A. (1995), "The Stock market and the corporate sector: A profit-based approach", Working paper no. 146. Jerome Levy Institute: New York.

[34] Shaikh, A. (2008), "Competition and Industrial Rates of Return" in *Issues in Finance and Industry: Essays in Honour of Ajit Singh*, Arestis P. and J. Eatwell (eds.). Palgrave Macmillan, New York, Ny.

[35] Tsoulfidis, L. and P. Tsaliki (2005), "Marxian Theory of Competition and the Concept of Regulating Capital: Evidence from Greek", Review of Radical Political Economics 37, 5-22.

[36] Zacharias, A. (2001), "Testing Profit Rate Equalization in the U.S. Manufacturing Sector: 1947–1998", Jerome Levy Economics Institute Working Paper No. 321.

Figure 1 - Sectoral Incremental Rates of Return on Capital (IROR) in Austria, 1977-2008

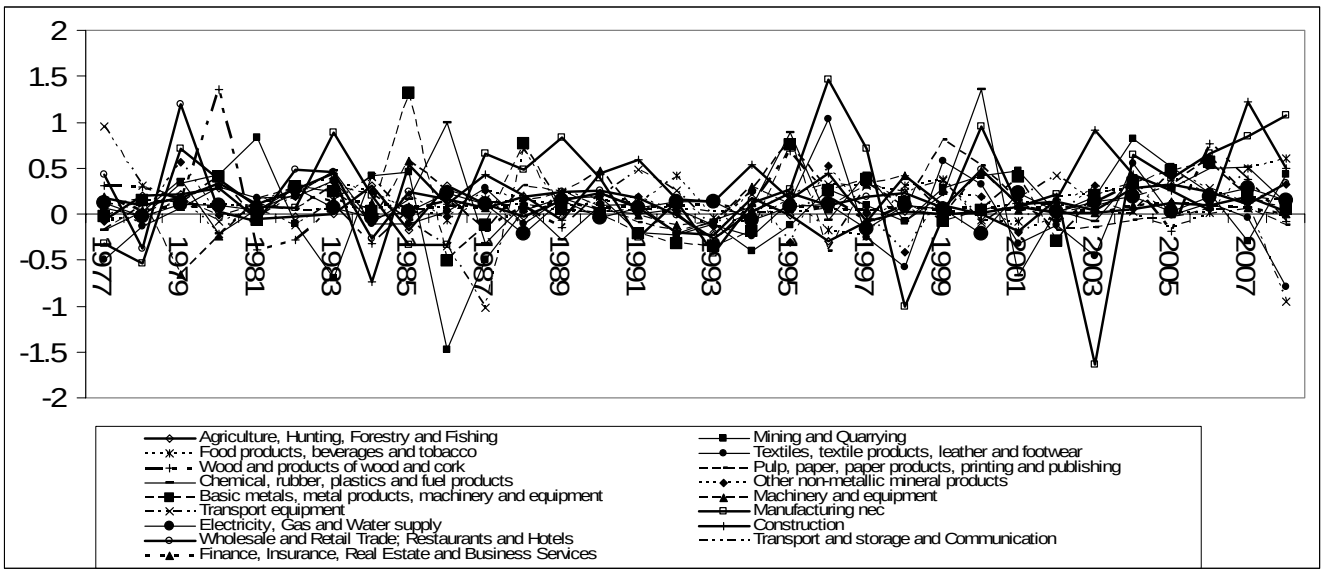

Figure 2 - Sectoral Incremental Rates of Return on Capital (IROR) in Finland, 1976-2008

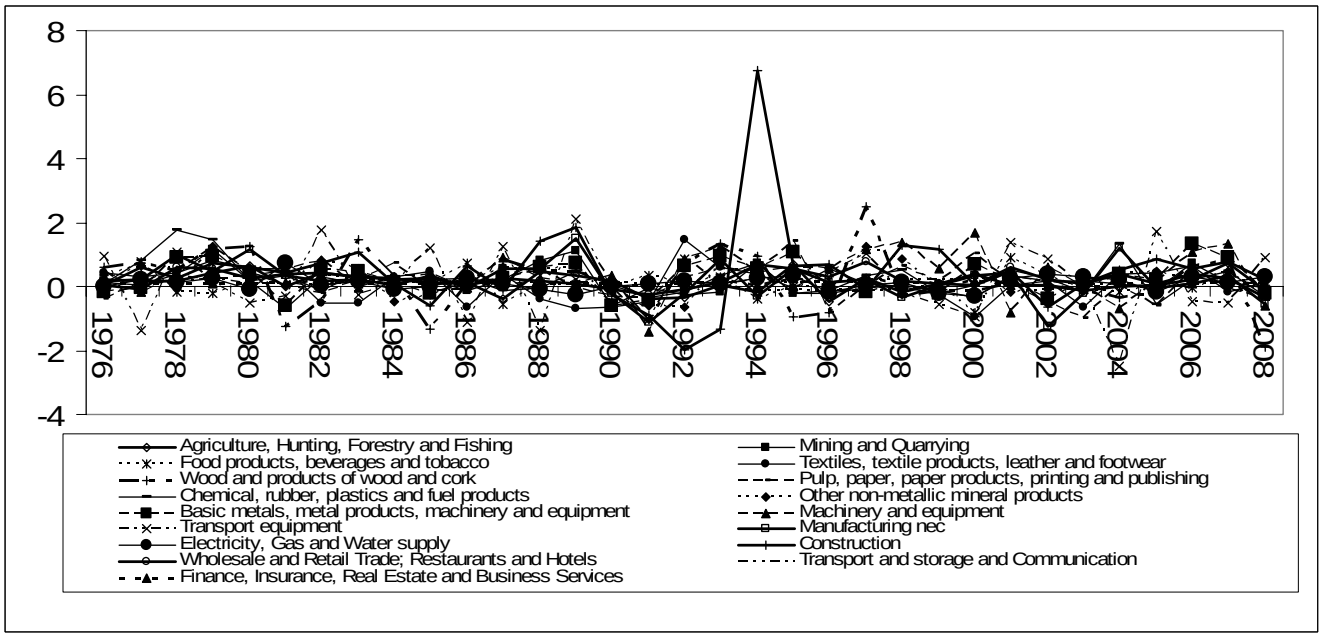

Figure 3 - Sectoral Incremental Rates of Return on Capital (IROR) in Italy, 1971-2008

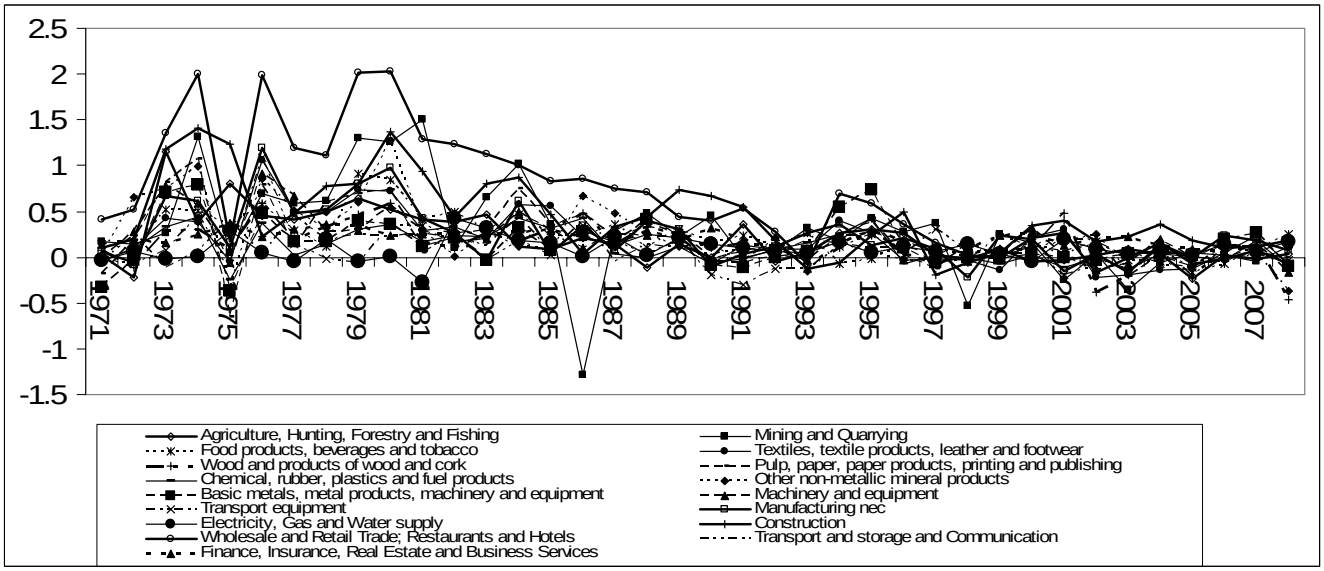

Figure 4 - Sectoral Incremental Rates of Return on Capital (IROR) in the Netherlands, 1988-2008

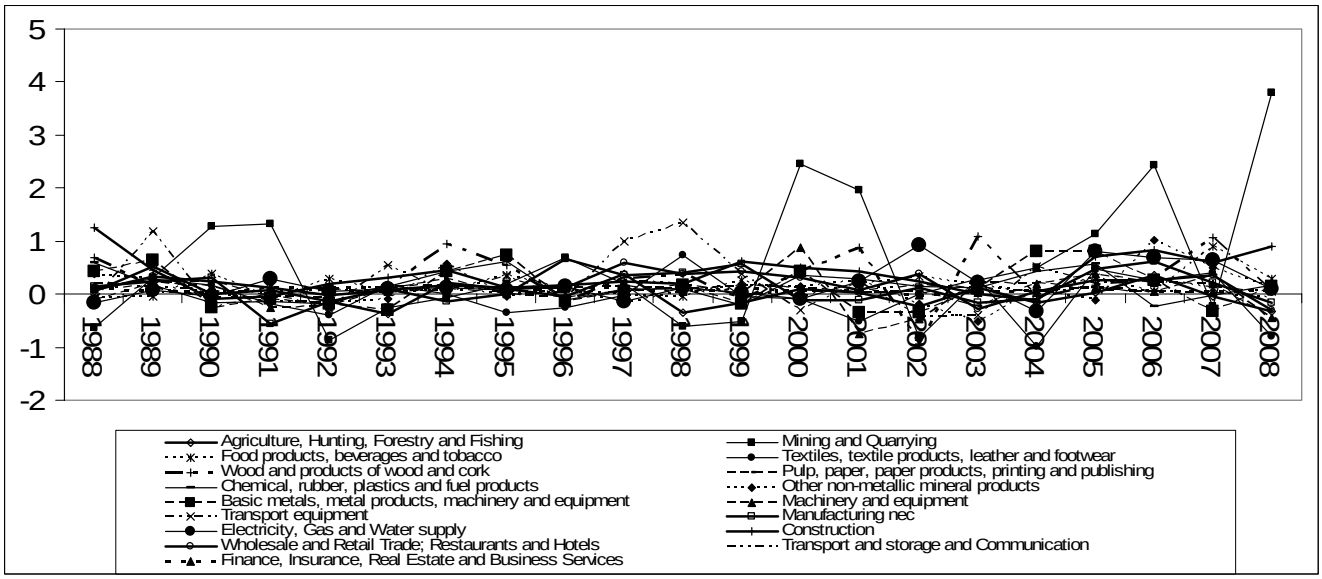

Figure 5 - Sectoral Incremental Rates of Return on Capital (IROR) in Norway, 1971-2006

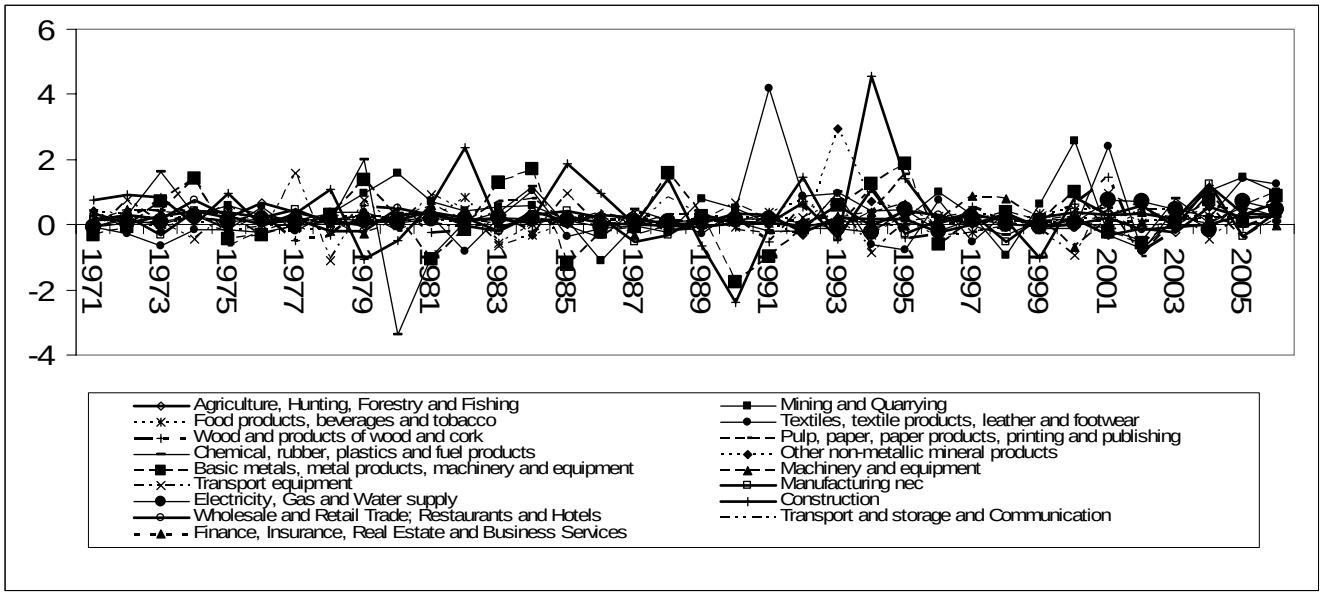

Figure 6 - Sectoral Incremental Rates of Return on Capital (IROR) in the US, 1988-2007

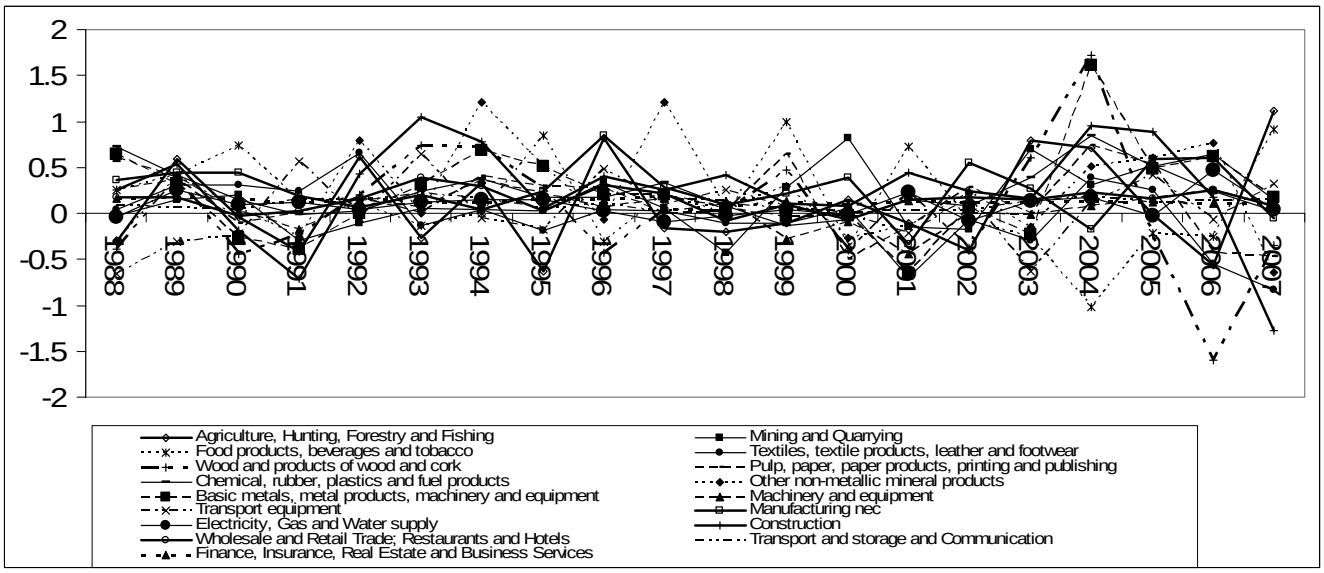

Figure 7 - Sectoral Incremental Rates of Return on Capital (IROR) in West Germany, 1971-1991

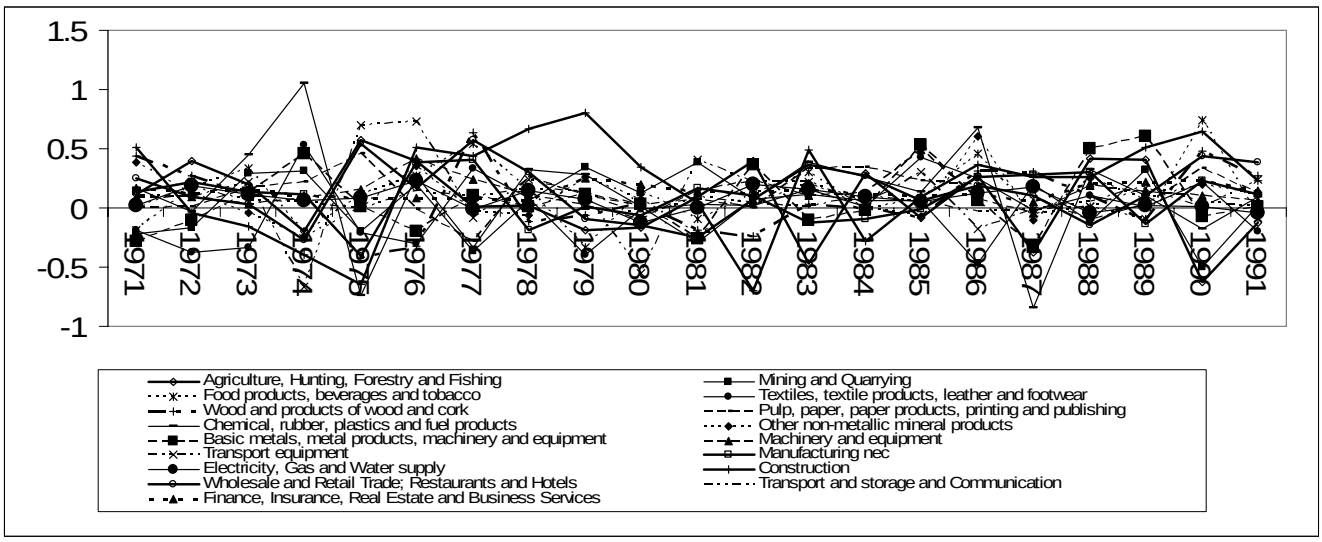

Figure 8 – Dispersion of Sectoral Incremental Rates of Return on Capital (IROR) in Austria, 1977-2008

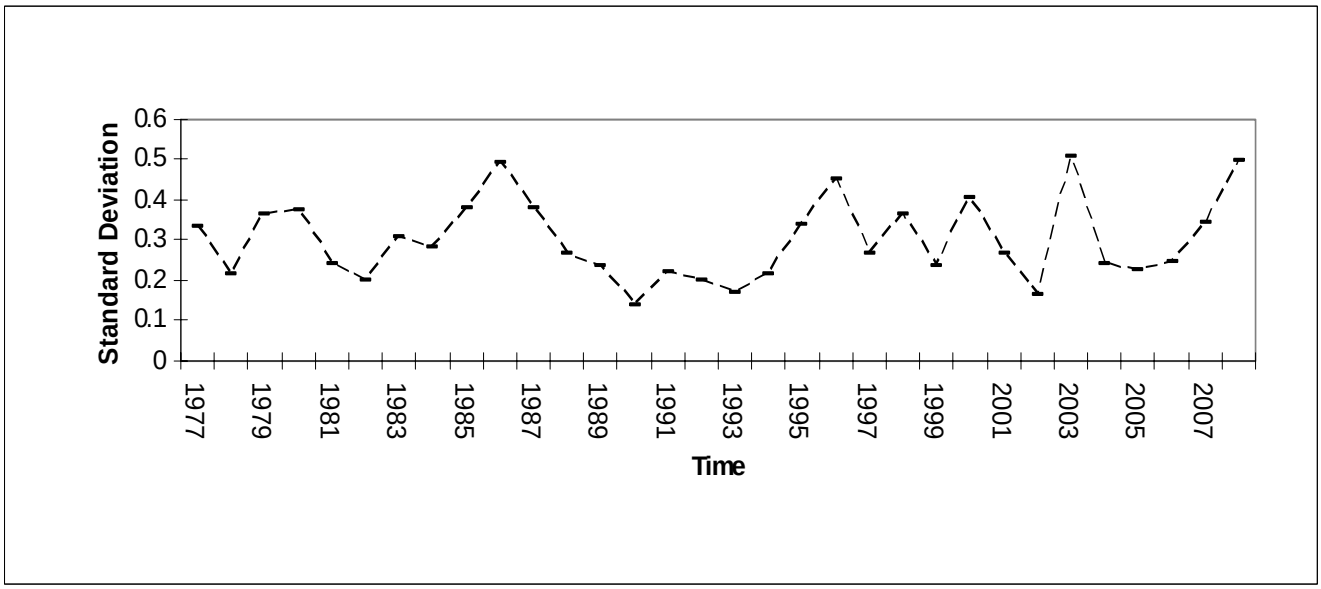

Figure 9 - Dispersion of Sectoral Incremental Rates of Return on Capital (IROR) in Finland, 1976-2008

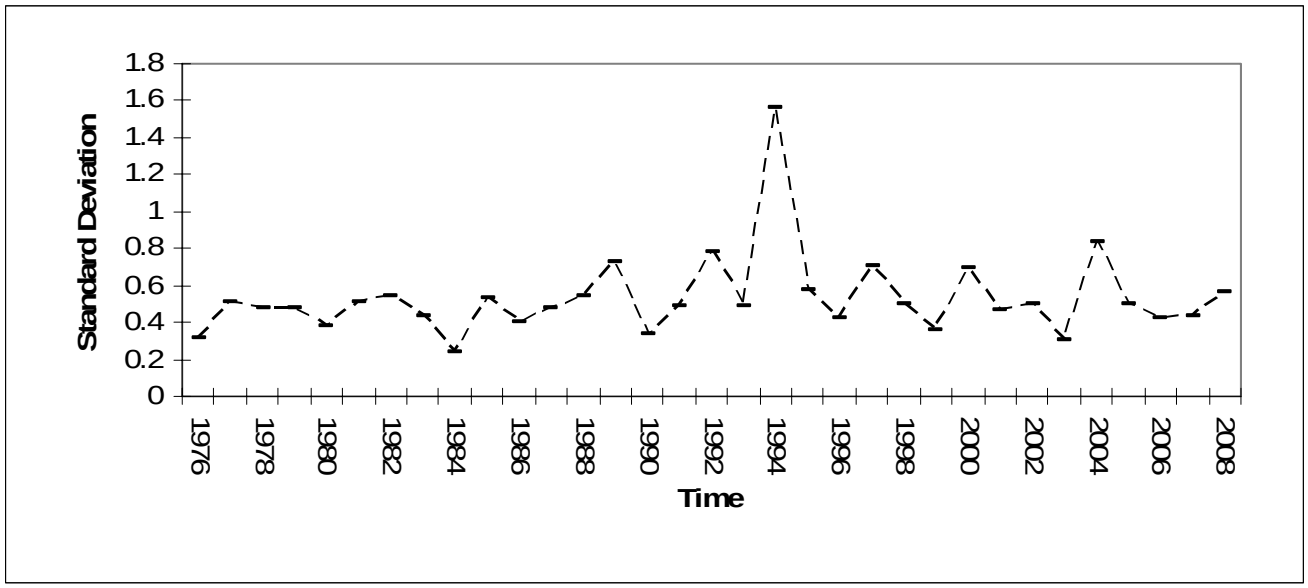

Figure 10 - Dispersion of Sectoral Incremental Rates of Return on Capital (IROR) in Italy, 1971-2008

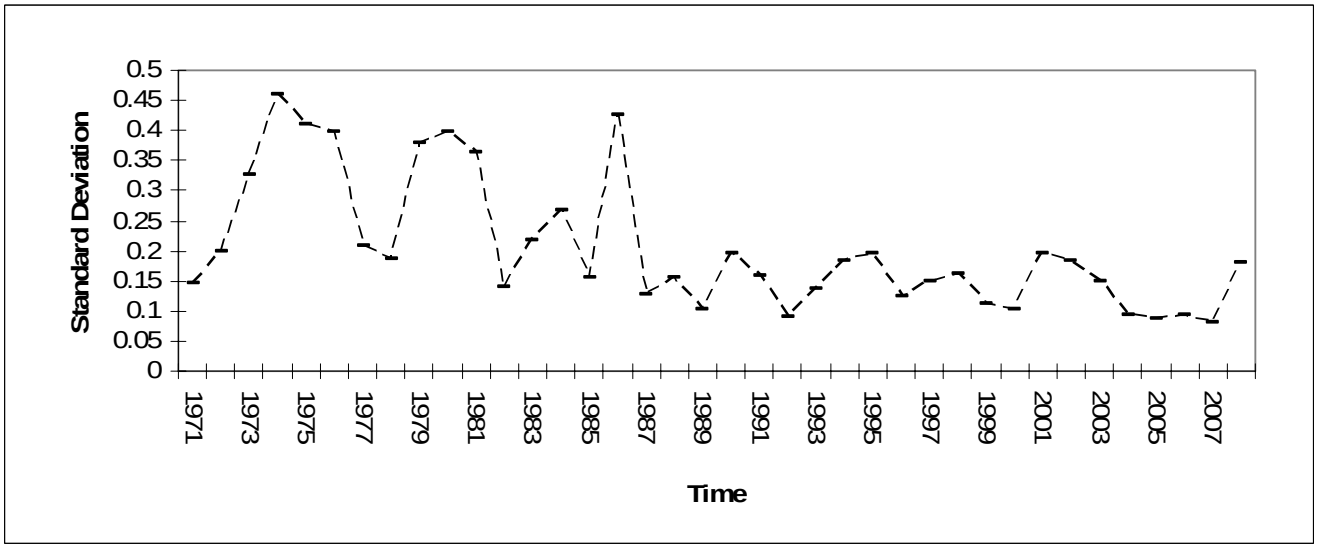

Figure 11 - Dispersion of Sectoral Incremental Rates of Return on Capital (IROR) in the Netherlands, 1988-2008

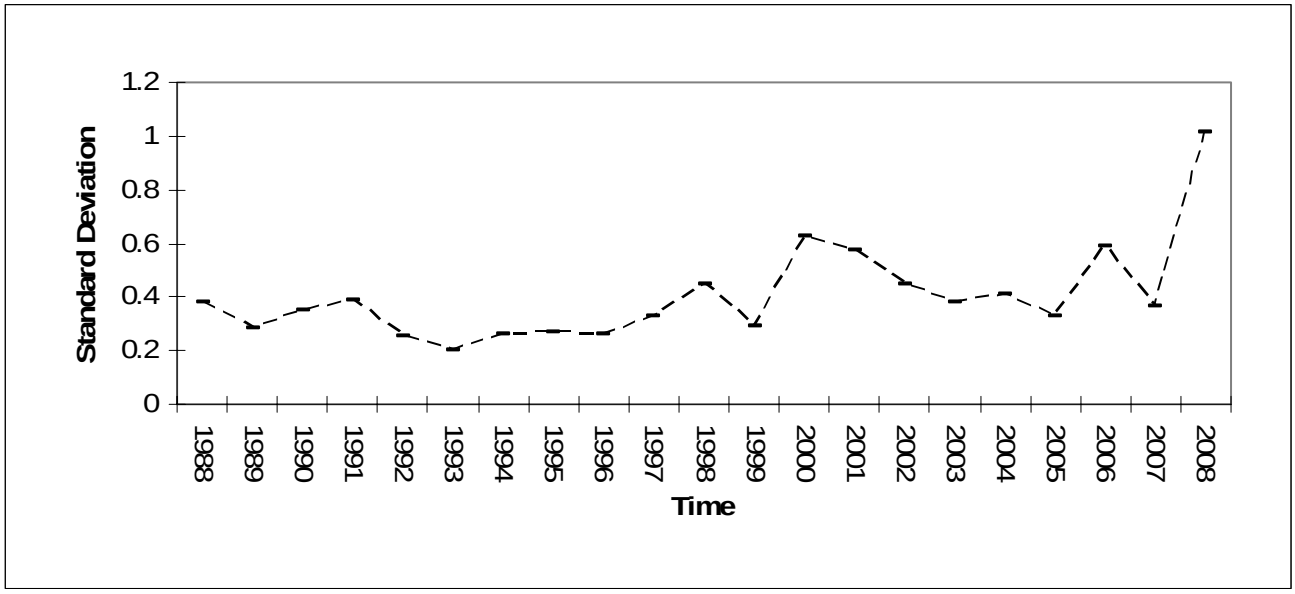

Figure 12 - Dispersion of Sectoral Incremental Rates of Return on Capital (IROR) in Norway, 1971-2006

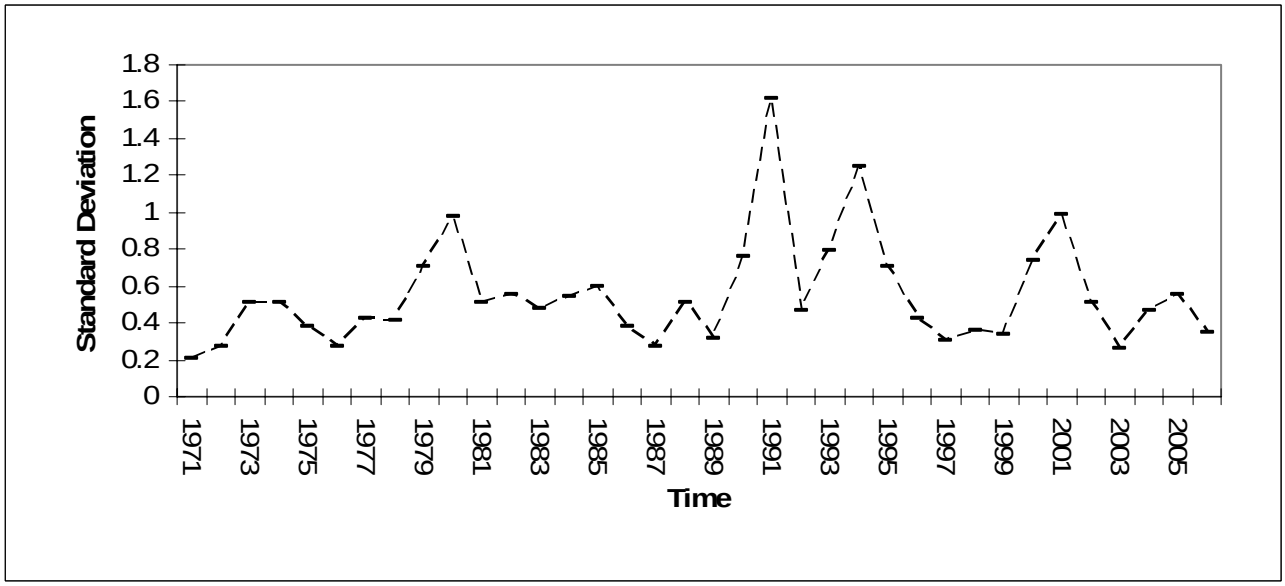

Figure 13 - Dispersion of Sectoral Incremental Rates of Return on Capital (IROR) in the US, 1988-2007

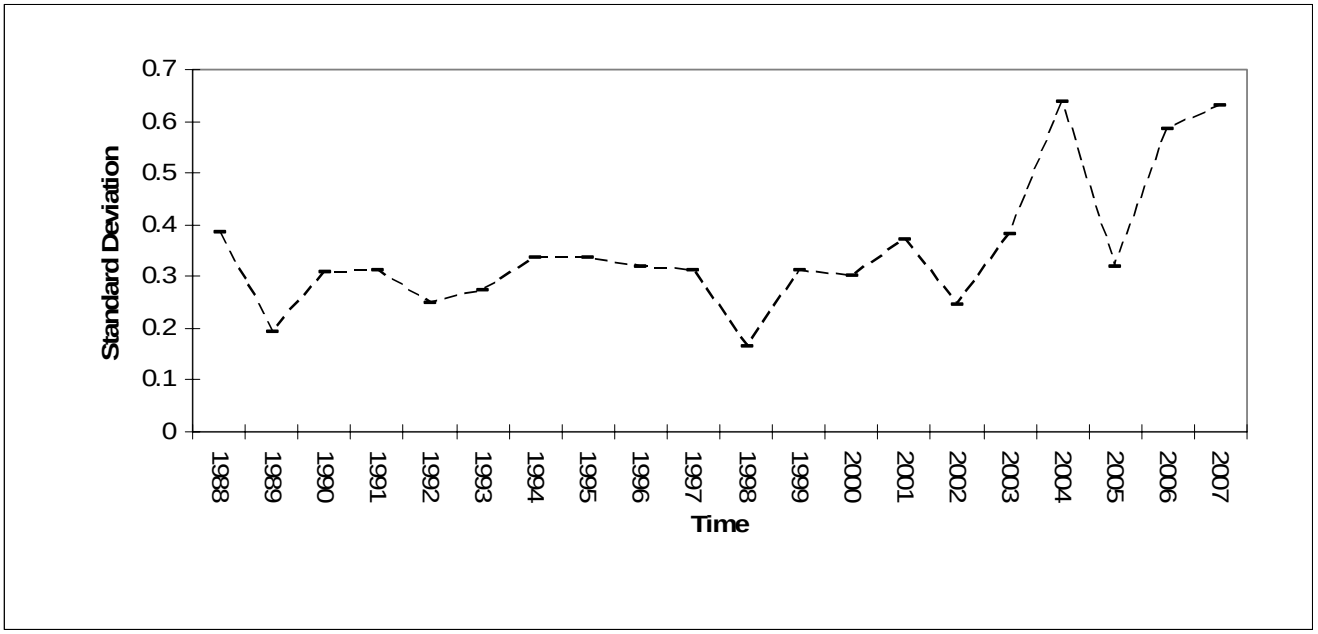

Figure 14 - Dispersion of Sectoral Incremental Rates of Return on Capital (IROR) in West Germany, 1971-1991

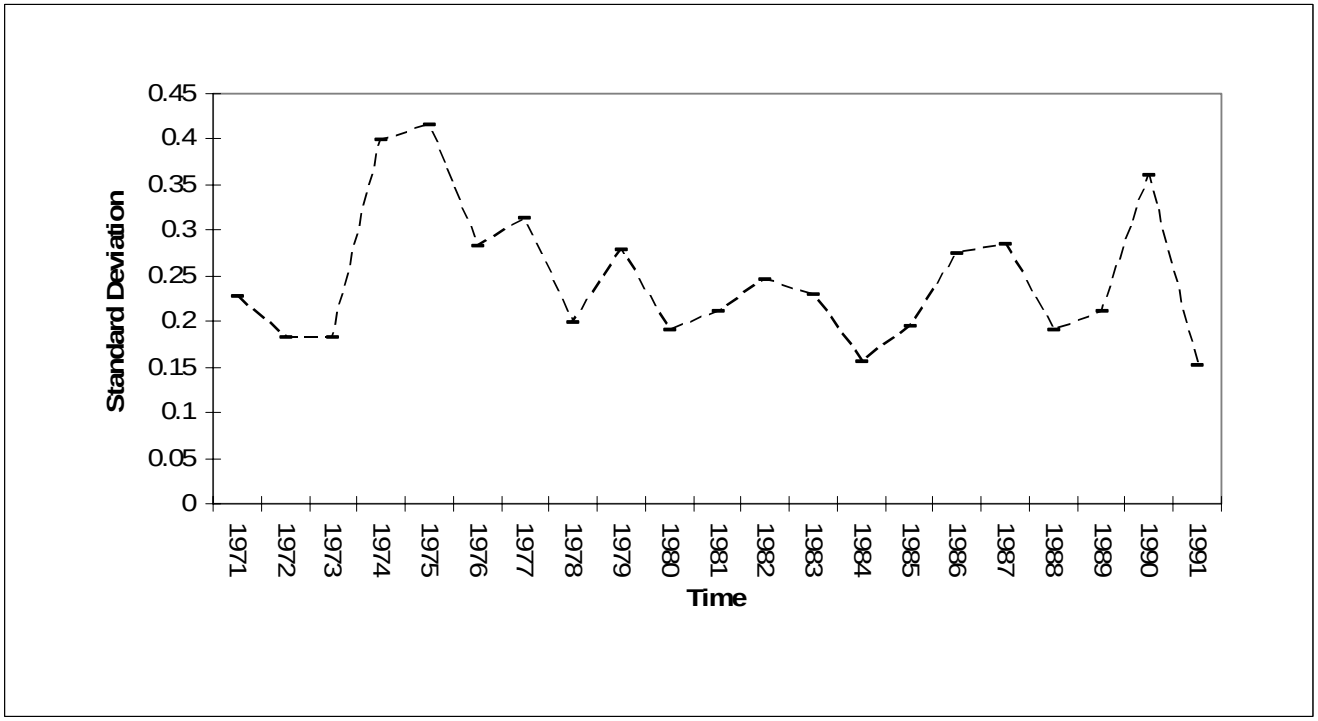

Table 1 - Nonlinear trends in Sectoral Incremental Rates of Return on Capital (IROR) in Austria, 1977-2008

	α^a	β^a	γ^a	δ^a	Wald test[b]	ρ	95% confidence interval	
Agriculture, Hunting, Forestry and Fishing	-0.14	0.65	-0.79	-	13.49	-0.20	-0.45	0.09
	0.00	*0.19*	*0.13*	-	*0.00*			
Mining and Quarrying	0.03	-1.43	5.50	-4.09	0.52	0.05	-0.22	0.37
	0.86	*0.65*	*0.57*	*0.56*	*0.97*			
Food products, beverages and tobacco	0.06	-1.14	3.03	-2.05	0.93	0.13	-0.18	0.38
	0.47	*0.44*	*0.51*	*0.54*	*0.92*			
Textiles, textile products, leather and footwear	-0.08	-0.19	-	-	3.96	-0.17	-0.43	0.14
	0.23	*0.53*	-	-	*0.14*			
Wood and products of wood and cork	-0.04	-0.13	2.51	-2.06	2.41	-0.31	-0.55	-0.01
	0.73	*0.95*	*0.71*	*0.68*	*0.66*			
Pulp, paper, paper products, printing and publishing	-0.09	1.34	-3.13	1.57	2.43	-0.04	-0.29	0.26
	0.40	*0.48*	*0.61*	*0.72*	*0.66*			
Chemical, rubber, plastics and fuel products	0.13	-1.35	3.08	-2.03	2.81	-0.36	-0.58	-0.02
	0.20	*0.45*	*0.60*	*0.63*	*0.59*			
Other non-metallic mineral products	-0.04	0.71	-1.61	0.85	1.04	-0.39	-0.61	-0.08
	0.54	*0.51*	*0.66*	*0.75*	*0.90*			
Basic metals and metal products	-0.09	2.49	-6.77	4.25	2.41	-0.20	-0.43	0.11
	0.49	*0.24*	*0.31*	*0.38*	*0.66*			
Machinery and equipment	0.17	-2.00	3.30	-1.39	5.13	-0.07	-0.32	0.23
	0.09	*0.23*	*0.53*	*0.71*	*0.27*			
Transport equipment	0.59	-	-	-	4.21	-0.04	-0.32	0.28
	0.04	-	-	-	*0.04*			
Manufacturing nec	0.11	0.45	-6.18	5.44	2.67	0.02	-0.26	0.29
	0.62	*0.90*	*0.59*	*0.51*	*0.61*			
Electricity, Gas and Water supply	-0.01	-0.74	2.40	-1.56	3.40	-0.13	-0.40	0.14
	0.90	*0.43*	*0.39*	*0.44*	*0.49*			
Construction	0.25	-2.37	5.91	-3.65	5.37	-0.13	-0.40	0.16
	0.07	*0.33*	*0.45*	*0.51*	*0.25*			
Wholesale and Retail Trade; Restaurants and Hotels	-0.09	2.12	-5.65	3.79	7.21	-0.38	-0.62	-0.06
	0.17	*0.06*	*0.14*	*0.18*	*0.13*			
Transport and storage and Communication	-0.11	0.57	-0.74	0.33	6.64	0.31	0.03	0.55
	0.06	*0.50*	*0.74*	*0.82*	*0.16*			
Finance, Insurance, Real Estate and Business Services	-0.05	0.18	0.00	-	5.37	0.15	-0.17	0.43
	0.11	*0.57*	*0.99*	-	*0.15*			

a: coefficient in normal characters, p-value in italics.

b: statistic in normal characters, p-value in italics. The null hypothesis is that the coefficients are jointly zero.

Table 2 - Nonlinear trends in Sectoral Incremental Rates of Return on Capital (IROR) in Finland, 1976-2008

	α^a	β^a	γ^a	δ^a	Wald test[b]	ρ	95% confidence interval	
Agriculture, Hunting, Forestry and Fishing	-0.04	-0.35	-	-	12.05	-0.45	-0.66	-0.17
	0.26	*0.04*	-	-	*0.00*			
Mining and Quarrying	-0.12	1.21	-3.86	2.76	1.26	-0.04	-0.28	0.23
	0.40	*0.62*	*0.62*	*0.62*	*0.87*			
Food products, beverages and tobacco	-0.05	-1.20	4.41	-2.96	2.16	0.03	-0.26	0.31
	0.77	*0.65*	*0.59*	*0.62*	*0.71*			
Textiles, textile products, leather and footwear	-0.05	-0.63	3.80	-2.99	0.61	-0.12	-0.38	0.17
	0.85	*0.88*	*0.78*	*0.76*	*0.96*			
Wood and products of wood and cork	-0.06	-0.45	6.19	-5.34	1.22	-0.17	-0.44	0.13
	0.86	*0.93*	*0.72*	*0.66*	*0.87*			
Pulp, paper, paper products, printing and publishing	-0.25	3.85	-9.56	5.40	3.77	-0.14	-0.40	0.20
	0.18	*0.24*	*0.36*	*0.47*	*0.44*			
Chemical, rubber, plastics and fuel products	-0.19	3.54	-3.40	-	11.90	-0.25	-0.50	0.05
	0.07	*0.00*	*0.00*	-	*0.01*			
Other non-metallic mineral products	0.08	-1.38	6.44	-5.14	1.45	0.05	-0.21	0.35
	0.59	*0.62*	*0.47*	*0.42*	*0.84*			
Basic metals and metal products	0.15	-0.75	1.59	-1.35	3.52	0.02	-0.28	0.27
	0.32	*0.77*	*0.84*	*0.81*	*0.47*			
Machinery and equipment	0.45	-3.49	5.29	-1.97	6.56	-0.23	-0.48	0.08
	0.07	*0.42*	*0.70*	*0.84*	*0.16*			
Transport equipment	-0.32	6.54	-29.41	24.25	14.31	-0.48	-0.69	-0.21
	0.17	*0.10*	*0.01*	*0.00*	*0.01*			
Manufacturing nec	-0.37	5.82	-14.61	9.03	4.24	-0.17	-0.41	0.12
	0.06	*0.09*	*0.18*	*0.25*	*0.38*			
Electricity, Gas and Water supply	0.00	-1.09	2.30	-1.28	1.95	0.11	-0.17	0.34
	0.98	*0.54*	*0.67*	*0.74*	*0.75*			
Construction	0.59	-7.13	22.22	-16.00	2.08	-0.11	-0.36	0.20
	0.22	*0.38*	*0.39*	*0.39*	*0.72*			
Wholesale and Retail Trade; Restaurants and Hotels	-0.01	0.85	-4.58	3.60	3.69	0.22	-0.08	0.46
	0.95	*0.53*	*0.28*	*0.24*	*0.45*			
Transport and storage and Communication	0.03	-1.19	1.56	-0.28	6.00	0.20	-0.08	0.44
	0.73	*0.25*	*0.54*	*0.87*	*0.20*			
Finance, Insurance, Real Estate and Business Services	-0.01	-1.09	1.10	-	9.05	0.09	-0.19	0.36
	0.90	*0.06*	*0.04*	-	*0.03*			

a: coefficient in normal characters, p-value in italics.

b: statistic in normal characters, p-value in italics. The null hypothesis is that the coefficients are jointly zero.

Table 3 - Nonlinear trends in Sectoral Incremental Rates of Return on Capital (IROR) in Italy, 1971-2008

	α[a]	β[a]	γ[a]	δ[a]	Wald test[b]	ρ	95% confidence interval	
Agriculture, Hunting, Forestry and Fishing	0.12	-4.06	12.03	-8.48	57.66	-0.48	-0.67	-0.19
	0.00	*0.00*	*0.00*	*0.00*	*0.00*			
Mining and Quarrying	-0.14	5.34	-15.06	10.13	9.98	-0.07	-0.31	0.19
	0.26	*0.02*	*0.03*	*0.05*	*0.04*			
Food products, beverages and tobacco	-0.03	0.62	-1.48	1.01	1.91	-0.04	-0.30	0.23
	0.55	*0.41*	*0.52*	*0.54*	*0.75*			
Textiles, textile products, leather and footwear	-1.55	1.48	-	-	4.25	0.15	-0.12	0.38
	0.05	*0.07*	-	-	*0.12*			
Wood and products of wood and cork	-0.02	-1.11	1.19	-	22.21	-0.26	-0.51	0.03
	0.61	*0.01*	*0.01*	-	*0.00*			
Pulp, paper, paper products, printing and publishing	-0.05	1.02	-1.63	0.47	5.61	-0.31	-0.55	-0.03
	0.20	*0.16*	*0.49*	*0.79*	*0.23*			
Chemical, rubber, plastics and fuel products	-0.63	0.65	-	-	9.53	0.26	-0.05	0.49
	0.00	*0.01*	-	-	*0.01*			
Other non-metallic mineral products	-0.09	1.67	-1.45	-	10.60	-0.09	-0.33	0.15
	0.08	*0.00*	*0.02*	-	*0.01*			
Basic metals and metal products	-0.01	-0.19	-0.13	-	6.05	0.17	-0.10	0.40
	0.78	*0.67*	*0.79*	-	*0.11*			
Machinery and equipment	-0.05	0.92	-0.86	-	8.80	0.19	-0.09	0.41
	0.06	*0.00*	*0.01*	-	*0.03*			
Transport equipment	-0.07	0.28	-2.53	2.34	8.17	0.23	-0.02	0.49
	0.27	*0.80*	*0.47*	*0.36*	*0.09*			
Manufacturing nec	0.63	-2.35	1.75	-	1.71	-0.11	-0.35	0.15
	0.20	*0.24*	*0.28*	-	*0.63*			
Electricity, Gas and Water supply	0.18	-4.89	13.68	-9.02	28.72	-0.07	-0.32	0.18
	0.00	*0.00*	*0.00*	*0.00*	*0.00*			
Construction	-0.03	2.11	-2.11	-	15.37	0.14	-0.16	0.34
	0.60	*0.00*	*0.01*	-	*0.00*			
Wholesale and Retail Trade; Restaurants and Hotels	-0.09	4.77	-15.55	11.17	55.51	-0.28	-0.51	-0.02
	0.08	*0.00*	*0.00*	*0.00*	*0.00*			
Transport and storage and Communication	0.13	-3.74	9.87	-6.31	37.11	-0.37	-0.58	-0.11
	0.00	*0.00*	*0.00*	*0.00*	*0.00*			
Finance, Insurance, Real Estate and Business Services	0.17	-3.07	8.57	-5.53	18.48	-0.22	-0.43	0.07
	0.00	*0.00*	*0.00*	*0.00*	*0.00*			

a: coefficient in normal characters, p-value in italics.

b: statistic in normal characters, p-value in italics. The null hypothesis is that the coefficients are jointly zero.

Table 4 - Nonlinear trends in Sectoral Incremental Rates of Return on Capital (IROR) in the Netherlands, 1988-2008

	α^a	β^a	γ^a	δ^a	Wald test[b]	ρ	95% confidence interval	
Agriculture, Hunting, Forestry and Fishing	-0.28	0.94	0.47	-1.24	23.19	-0.37	-0.66	0.03
	0.02	*0.59*	*0.93*	*0.73*	*0.00*			
Mining and Quarrying	1.48	-14.03	38.04	-26.25	6.81	-0.22	-0.53	0.18
	0.06	*0.19*	*0.23*	*0.23*	*0.15*			
Food products, beverages and tobacco	-0.07	1.71	-6.09	4.19	2.47	-0.20	-0.48	0.22
	0.70	*0.48*	*0.39*	*0.40*	*0.65*			
Textiles, textile products, leather and footwear	-0.34	1.39	-1.72	0.56	7.09	-0.31	-0.59	0.11
	0.20	*0.71*	*0.88*	*0.94*	*0.13*			
Wood and products of wood and cork	-0.02	2.59	-11.43	9.49	59.01	-0.57	-0.78	-0.18
	0.87	*0.11*	*0.00*	*0.00*	*0.00*			
Pulp, paper, paper products, printing and publishing	-0.29	2.91	-7.03	4.37	29.30	-0.71	-0.88	-0.36
	0.00	*0.00*	*0.00*	*0.00*	*0.00*			
Chemical, rubber, plastics and fuel products	-0.10	1.51	-6.35	5.37	5.40	0.22	-0.13	0.51
	0.57	*0.54*	*0.38*	*0.28*	*0.25*			
Other non-metallic mineral products	-0.02	-0.73	1.84	-0.88	2.30	-0.20	-0.53	0.20
	0.93	*0.78*	*0.81*	*0.87*	*0.68*			
Basic metals and metal products	0.08	-2.12	6.73	-4.40	1.73	0.16	-0.16	0.48
	0.74	*0.53*	*0.50*	*0.53*	*0.79*			
Machinery and equipment	-0.24	1.48	-3.31	1.77	5.31	-0.25	-0.54	0.12
	0.24	*0.60*	*0.69*	*0.76*	*0.26*			
Transport equipment	0.07	-1.37	8.10	-7.08	2.34	0.11	-0.26	0.43
	0.82	*0.76*	*0.55*	*0.45*	*0.67*			
Manufacturing nec	0.02	-0.60	1.41	-0.92	0.42	-0.11	-0.41	0.22
	0.93	*0.83*	*0.86*	*0.87*	*0.98*			
Electricity, Gas and Water supply	0.16	-1.14	1.49	-0.89	3.18	0.09	-0.24	0.43
	0.45	*0.70*	*0.86*	*0.88*	*0.53*			
Construction	0.41	-2.93	5.61	-2.03	48.29	0.17	-0.20	0.48
	0.01	*0.16*	*0.36*	*0.64*	*0.00*			
Wholesale and Retail Trade; Restaurants and Hotels	-0.17	2.58	-6.21	3.64	3.92	-0.10	-0.44	0.28
	0.21	*0.16*	*0.23*	*0.31*	*0.42*			
Transport and storage and Communication	-0.30	3.27	-9.07	6.03	10.41	0.46	0.07	0.72
	0.01	*0.02*	*0.01*	*0.01*	*0.03*			
Finance, Insurance, Real Estate and Business Services	-0.35	3.97	-11.36	7.65	31.88	0.18	-0.20	0.48
	0.00	*0.00*	*0.00*	*0.00*	*0.00*			

a: coefficient in normal characters, p-value in italics.

b: statistic in normal characters, p-value in italics. The null hypothesis is that the coefficients are jointly zero.

Table 5 - Nonlinear trends in Sectoral Incremental Rates of Return on Capital (IROR) in Norway, 1971-2006

	α^a	β^a	γ^a	δ^a	Wald test[b]	ρ	95% confidence interval	
Agriculture, Hunting, Forestry and Fishing	-0.25	3.46	-11.55	8.47	10.19	-0.09	-0.38	0.17
	0.01	*0.04*	*0.04*	*0.03*	*0.04*			
Mining and Quarrying	0.08	2.93	-11.18	8.10	3.83	0.14	-0.14	0.40
	0.76	*0.54*	*0.48*	*0.48*	*0.43*			
Food products, beverages and tobacco	-0.10	1.03	-3.71	3.09	2.74	0.10	-0.19	0.31
	0.39	*0.64*	*0.59*	*0.54*	*0.60*			
Textiles, textile products, leather and footwear	0.69	-7.97	14.07	-6.88	3.08	0.02	-0.24	0.29
	0.17	*0.39*	*0.64*	*0.75*	*0.54*			
Wood and products of wood and cork	-0.02	-0.65	3.63	-2.96	0.56	-0.29	-0.53	0.01
	0.90	*0.84*	*0.73*	*0.70*	*0.97*			
Pulp, paper, paper products, printing and publishing	-0.19	2.15	-2.83	0.63	3.15	-0.12	-0.37	0.18
	0.24	*0.46*	*0.76*	*0.93*	*0.53*			
Chemical, rubber, plastics and fuel products	-0.03	-2.19	12.31	-10.31	1.71	-0.20	-0.44	0.08
	0.92	*0.69*	*0.49*	*0.43*	*0.79*			
Other non-metallic mineral products	0.08	-0.75	1.16	-0.13	0.75	-0.18	-0.41	0.12
	0.69	*0.85*	*0.93*	*0.99*	*0.94*			
Basic metals and metal products	-0.10	2.58	-6.30	3.35	0.82	0.13	-0.13	0.36
	0.74	*0.64*	*0.71*	*0.78*	*0.94*			
Machinery and equipment	0.10	-2.23	7.87	-5.69	0.98	0.20	-0.07	0.44
	0.46	*0.38*	*0.34*	*0.34*	*0.91*			
Transport equipment	-0.02	-0.19	1.94	-1.86	0.29	-0.31	-0.52	0.00
	0.90	*0.95*	*0.84*	*0.79*	*0.99*			
Manufacturing nec	-0.13	1.96	-6.41	4.74	2.54	-0.47	-0.66	-0.17
	0.15	*0.22*	*0.22*	*0.22*	*0.64*			
Electricity, Gas and Water supply	-0.05	0.72	-3.13	2.37	0.91	0.17	-0.13	0.42
	0.64	*0.71*	*0.61*	*0.60*	*0.92*			
Construction	0.40	-6.14	19.27	-13.20	1.11	-0.08	-0.35	0.19
	0.34	*0.43*	*0.44*	*0.47*	*0.89*			
Wholesale and Retail Trade; Restaurants and Hotels	-0.16	1.70	-3.69	2.19	4.06	-0.21	-0.46	0.08
	0.10	*0.33*	*0.51*	*0.59*	*0.40*			
Transport and storage and Communication	-0.14	1.33	-4.75	3.41	3.69	0.30	0.05	0.53
	0.22	*0.49*	*0.42*	*0.40*	*0.45*			
Finance, Insurance, Real Estate and Business Services	-0.20	2.96	-9.03	6.37	10.68	0.23	-0.05	0.46
	0.00	*0.01*	*0.02*	*0.02*	*0.03*			

a: coefficient in normal characters, p-value in italics.

b: statistic in normal characters, p-value in italics. The null hypothesis is that the coefficients are jointly zero.

Table 6 - Nonlinear trends in Sectoral Incremental Rates of Return on Capital (IROR) in the US, 1988-2007

	α^a	β^a	γ^a	δ^a	Wald test[b]	ρ	95% confidence interval	
Agriculture, Hunting, Forestry and Fishing	0.36	6.29	18.52	12.96	597.92	-0.61	-0.83	-0.22
	0.01	*0.00*	*0.00*	*0.00*	*0.00*			
Mining and Quarrying	0.36	4.49	10.81	6.76	3.42	-0.28	-0.58	0.12
	0.09	*0.13*	*0.22*	*0.27*	*0.49*			
Food products, beverages and tobacco	0.22	2.15	2.12	0.40	1.29	-0.04	-0.44	0.28
	0.61	*0.72*	*0.90*	*0.97*	*0.86*			
Textiles, textile products, leather and footwear	0.81	7.81	18.10	11.15	20.22	0.22	-0.17	0.51
	0.00	*0.01*	*0.03*	*0.06*	*0.00*			
Wood and products of wood and cork	0.25	3.26	11.44	8.19	1.67	0.17	-0.19	0.52
	0.45	*0.45*	*0.35*	*0.34*	*0.80*			
Pulp, paper, paper products, printing and publishing	-0.03	0.30	1.38	1.30	0.93	-0.12	-0.43	0.27
	0.85	*0.89*	*0.83*	*0.77*	*0.92*			
Chemical, rubber, plastics and fuel products	0.40	3.96	10.36	-6.17	32.61	0.11	-0.24	0.46
	0.00	*0.02*	*0.03*	*0.07*	*0.00*			
Other non-metallic mineral products	0.27	6.17	17.40	11.09	6.37	-0.43	-0.66	0.01
	0.34	*0.10*	*0.11*	*0.14*	*0.17*			
Basic metals and metal products	0.37	3.68	7.77	3.91	5.26	0.03	-0.29	0.36
	0.17	*0.32*	*0.47*	*0.60*	*0.26*			
Machinery and equipment	0.14	0.61	-	-	14.37	-0.01	-0.38	0.31
	0.00	*0.00*	-	-	*0.00*			
Transport equipment	0.01	0.06	0.73	-	7.01	-0.40	-0.67	0.01
	0.95	*0.96*	*0.53*	-	*0.07*			
Manufacturing nec	0.14	1.01	4.49	-3.52	2.86	-0.24	-0.53	0.14
	0.50	*0.72*	*0.57*	*0.52*	*0.58*			
Electricity, Gas and Water supply	0.01	0.77	2.99	2.36	1.36	-0.10	-0.47	0.24
	0.92	*0.67*	*0.58*	*0.53*	*0.85*			
Construction	0.01	0.80	5.17	4.10	1.64	0.28	-0.09	0.59
	0.97	*0.84*	*0.66*	*0.61*	*0.80*			
Wholesale and Retail Trade; Restaurants and Hotels	0.03	0.04	0.99	1.00	1.98	0.05	-0.34	0.42
	0.71	*0.97*	*0.76*	*0.66*	*0.74*			
Transport and storage and Communication	0.04	0.23	0.86	0.66	0.83	0.08	-0.27	0.39
	0.69	*0.85*	*0.81*	*0.79*	*0.93*			
Finance, Insurance, Real Estate and Business Services	-0.02	0.23	0.60	0.45	0.33	0.37	-0.05	0.66
	0.85	*0.85*	*0.87*	*0.86*	*0.99*			

a: coefficient in normal characters, p-value in italics.

b: statistic in normal characters, p-value in italics. The null hypothesis is that the coefficients are jointly zero.

Table 7 - Nonlinear trends in Sectoral Incremental Rates of Return on Capital (IROR) in West Germany, 1971-1991

	α^a	β^a	γ^a	δ^a	Wald test[b]	ρ	95% confidence interval	
Agriculture, Hunting, Forestry and Fishing	-0.10	0.30	1.89	-2.06	4.21	-0.35	-0.59	-0.03
	0.43	*0.86*	*0.69*	*0.54*	*0.38*			
Mining and Quarrying	-0.20	2.22	-6.27	3.97	2.77	-0.20	-0.52	0.22
	0.25	*0.34*	*0.35*	*0.39*	*0.60*			
Food products, beverages and tobacco	0.00	0.14	1.01	-1.47	5.76	-0.38	-0.65	-0.03
	0.96	*0.91*	*0.76*	*0.52*	*0.22*			
Textiles, textile products, leather and footwear	-0.15	1.77	-7.86	5.96	8.47	-0.31	-0.57	0.09
	0.33	*0.41*	*0.22*	*0.19*	*0.08*			
Wood and products of wood and cork	-1.44	5.56	-3.80	-	4.47	-0.24	-0.53	0.05
	0.10	*0.11*	*0.16*	-	*0.22*			
Pulp, paper, paper products, printing and publishing	0.03	0.13	-0.46	0.21	1.19	0.05	-0.28	0.42
	0.79	*0.94*	*0.93*	*0.95*	*0.88*			
Chemical, rubber, plastics and fuel products	-0.16	2.26	-5.36	3.37	0.60	-0.40	-0.65	0.09
	0.55	*0.56*	*0.63*	*0.67*	*0.96*			
Other non-metallic mineral products	0.16	-2.37	5.84	-3.33	6.72	-0.35	-0.65	0.00
	0.17	*0.14*	*0.22*	*0.31*	*0.15*			
Basic metals and metal products	0.03	-0.27	0.15	-0.25	2.43	-0.16	-0.47	0.18
	0.84	*0.91*	*0.98*	*0.96*	*0.66*			
Machinery and equipment	0.02	0.52	-1.94	1.40	3.79	-0.04	-0.37	0.37
	0.80	*0.60*	*0.50*	*0.48*	*0.44*			
Transport equipment	0.09	-0.74	1.70	-1.03	0.38	-0.33	-0.64	0.06
	0.63	*0.78*	*0.83*	*0.86*	*0.98*			
Manufacturing nec	-0.02	-0.34	2.10	-1.71	1.06	-0.11	-0.41	0.24
	0.86	*0.84*	*0.68*	*0.64*	*0.90*			
Electricity, Gas and Water supply	-0.06	0.22	0.56	-0.79	4.49	-0.10	-0.45	0.30
	0.38	*0.81*	*0.84*	*0.68*	*0.34*			
Construction	0.29	-2.22	2.21	0.14	5.04	0.27	-0.11	0.57
	0.25	*0.54*	*0.83*	*0.99*	*0.28*			
Wholesale and Retail Trade; Restaurants and Hotels	0.00	0.73	-2.57	1.97	1.27	-0.03	-0.39	0.36
	1.00	*0.74*	*0.69*	*0.65*	*0.87*			
Transport and storage and Communication	-0.04	-0.10	1.23	-1.17	8.72	-0.20	-0.46	0.16
	0.39	*0.87*	*0.52*	*0.38*	*0.07*			
Finance, Insurance, Real Estate and Business Services	0.06	-0.29	0.89	-0.57	3.76	0.40	0.06	0.66
	0.35	*0.70*	*0.62*	*0.60*	*0.44*			

a: coefficient in normal characters, p-value in italics.

b: statistic in normal characters, p-value in italics. The null hypothesis is that the coefficients are jointly zero.

Table 8 – Significance Tests for Nonlinear Trend Parameters in Sectoral Incremental Rates of Return on Capital (IROR) for various OECD countries (Manufacturing industries)

	Austria, 1977-2008		Finland, 1976-2008		Italy, 1971-2008		Netherlands, 1988-2008		Norway, 1971-2006		US, 1988-2007		West Germany, 1971 1991	
	Constant	Wald test	Constant	Wald test	Constant	Wald test	Constant	Wald test	Constant	Wald test	Constant	Wald test	Constant	Wald test
Food products, beverages and tobacco	0.83	0.98	0.79	0.67	0.56	0.45	0.89	0.50	0.26	0.49	0.71	0.94	0.60	0.24
Textiles, textile products, leather and footwear	0.01	0.02	0.76	0.97	0.93	0.46	0.28	0.24	0.17	0.52	0.00	0.00	0.27	0.00
Wood and products of wood and cork	0.94	0.41	0.83	0.93	0.29	0.00	0.45	0.02	0.95	0.75	0.63	0.83	0.18	0.13
Pulp, paper, paper products, printing and publishing	0.54	0.82	0.39	0.58	0.84	0.48	0.01	0.12	0.19	0.52	0.91	0.99	0.83	0.88
Chemical, rubber, plastics and fuel products	0.20	0.61	0.98	0.06	0.11	0.13	0.99	0.46	0.79	0.82	0.00	0.00	0.42	0.91
Other non-metallic mineral products	0.44	0.88	0.50	0.93	0.66	0.01	0.68	0.94	0.82	0.93	0.53	0.04	0.17	0.21
Basic metals, metal products	0.99	0.97	0.14	0.32	0.10	0.08	0.44	0.85	0.76	0.94	0.05	0.10	0.88	0.71
Machinery and equipment	0.14	0.33	0.07	0.09	0.50	0.02	0.44	0.40	0.68	0.98	0.92	0.01	0.69	0.45
Transport equipment	0.63	0.05	0.20	0.03	0.80	0.30	0.59	0.44	0.82	1.00	0.34	0.02	0.81	1.00
Manufacturing nec	0.79	0.66	0.15	0.61	0.22	0.08	0.66	0.98	0.06	0.25	0.40	0.75	0.57	0.81

Table 9 – Autoregressive Parameter Estimates and Confidence Intervals of the Residuals of Nonlinear Trend Models in Sectoral Incremental Rates of Return on Capital (IROR) for various OECD countries (Manufacturing industries)

	Austria			Finland			Italy		
	ρ	95% conf. int.		ρ	95% conf. int.		ρ	95% conf. int.	
Food products, beverages and tobacco	0.12	-0.20	0.40	-0.06	-0.33	0.19	-0.10	-0.37	0.19
Textiles, textile products, leather and footwear	-0.15	-0.43	0.12	-0.16	-0.39	0.11	0.10	-0.17	0.36
Wood and products of wood and cork	-0.24	-0.53	0.09	-0.23	-0.49	0.07	-0.37	-0.58	-0.06
Pulp, paper, paper products, printing and publishing	-0.08	-0.37	0.22	-0.12	-0.40	0.19	-0.16	-0.43	0.11
Chemical, rubber, plastics and fuel products	-0.40	-0.62	-0.09	-0.26	-0.49	0.04	0.30	0.04	0.55
Other non-metallic mineral products	-0.37	-0.59	-0.07	0.01	-0.28	0.28	-0.04	-0.26	0.23
Basic metals, metal products	-0.28	-0.49	0.05	0.05	-0.21	0.33	0.27	0.00	0.48
Machinery and equipment	-0.10	-0.35	0.19	-0.16	-0.42	0.14	0.09	-0.21	0.38
Transport equipment	0.01	-0.24	0.33	-0.46	-0.67	-0.15	0.35	0.04	0.51
Manufacturing nec	0.02	-0.29	0.33	-0.08	-0.37	0.22	-0.12	-0.33	0.16

	Netherlands			Norway			US			West Germany		
	ρ	95% conf. int.		ρ	95% conf. int.		ρ	95% conf. int.		ρ	95% conf. int.	
Food products, beverages and tobacco	0.15	-0.22	0.52	-0.02	-0.26	0.26	0.00	-0.37	0.39	-0.38	-0.66	0.00
Textiles, textile products, leather and footwear	-0.27	-0.56	0.09	0.02	-0.25	0.29	0.25	-0.18	0.63	-0.37	-0.66	0.00
Wood and products of wood and cork	-0.52	-0.76	-0.18	-0.34	-0.58	-0.05	0.22	-0.19	0.55	-0.18	-0.50	0.19
Pulp, paper, paper products, printing and publishing	-0.39	-0.67	0.00	0.02	-0.27	0.27	-0.15	-0.46	0.20	-0.08	-0.39	0.28
Chemical, rubber, plastics and fuel products	0.18	-0.18	0.48	-0.16	-0.41	0.14	0.02	-0.33	0.37	-0.40	-0.66	0.01
Other non-metallic mineral products	-0.16	-0.48	0.23	-0.19	-0.46	0.09	-0.50	-0.74	-0.07	-0.22	-0.54	0.13
Basic metals, metal products	0.02	-0.29	0.36	0.16	-0.10	0.40	0.06	-0.31	0.36	-0.16	-0.47	0.23
Machinery and equipment	-0.32	-0.63	0.11	0.16	-0.10	0.39	-0.15	-0.48	0.20	-0.15	-0.46	0.22
Transport equipment	-0.01	-0.33	0.38	-0.22	-0.47	0.07	-0.36	-0.63	0.01	-0.35	-0.64	0.04
Manufacturing nec	-0.21	-0.54	0.17	-0.47	-0.68	-0.18	-0.23	-0.54	0.18	-0.01	-0.35	0.36