Economic Conditions, Investment and Employment in Europe

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Abstract

From 1999 the integrated currency 'Euro' has been introduced, however the doubt about introducing it has been discussed broadly. This paper presents an analysis on the European business cycle on the basis of the theory of optimum currency area, and analyses the problem of whether the movements of business cycle has shown convergence or not. The result is that the convergence has been ongoing recently. And this paper also considers of the reason of investment or employment that may be the big reason of promoting monetary integration. Some countries have realized increase of employment by exports and other countries have done it by domestic investment through appreciation of their own currencies. And on the whole, the process of increasing monetary integration in Europe, in other words, EMS (ERM) period, seems to have had a negative impact on employment.

1.   Introduction

This short paper analyses the relationship between monetary integration and economic performance, investment, and employment in Europe. It examines the characteristics of the European business cycle and presents the question of whether or not the movement of business cyclical convergence has coincided with an increase in labor demand and a rising rate of employment. In particular, this paper investigates whether the process of the European business

cycle has modified the relationship between employment and investment.

Some countries in the EU have not adopted the European Monetary Union (EMU). It has been said that it is because they have placed a priority on growth over other issues. Recession, slow growth and the high unemployment rate were especially serious in the 1980s. Numerous studies about the EU or EMU have focused on investment or employment; however, very few such studies have used empirical analysis to focus on the relationship between economic performance and investment or employment. This paper singles out the business cycle that is one criteria of the established notion of "optimum currency area" and analyzes investment and employment from that standpoint.

The analysis is organized as follows. Section 2 identifies business cycle characteristics. Section 3 analyzes the relationship between investment and employment over macroeconomic performance. Section 4 provides a summary in closing.

2.   Convergence of business cycles in Europe

a) The criteria for the optimum currency area

The merits and demerits associated with the theory of the optimum currency area indicate that one of the preconditions for monetary union is the convergence of participating countries' business cycles. Lack of convergence is an indication of unsuitability in realizing monetary integration because it can not respond to exogenous shocks (ex., Bayoumi and Eichengreen, 1998). Other economists have suggested, however, that the optimum preconditions for a currency area can be obtained as a consequence of its creation establishment. In practice, monetary integration would increase both business cyclical convergence and trade integration of the countries involved in the integration (Frankel and Rose, 1997 and Peersman and Smets, 2001). The two processes are analyzed

in this section by examining a sample period divided into three segments.

The question of whether countries tend to have highly synchronized business cycles has preoccupied economists since Mundell. Countries with highly synchronized business cycles forego little of their monetary independence if they share a common currency. Thus, countries with highly synchronized business cycles have a propensity to adopt a common currency. As a result, they are potentially subject to asymmetric shocks.

In order to evaluate asymmetric shocks, this paper estimates SD ($\Delta GDP_i - \Delta GDP_j$). i represents each country in Europe as listed below, while j represents Germany, and all are the chief members of the EU. This is the standard deviation of the difference in the natural logarithm of real output between i and j countries. And this variable regresses on a continuum and a time trend. The positive coefficient indicates that two countries with a common currency tend to have more tightly correlated business cycles. The data is quarterly and the sample period is from 1972 to 1999. The sample period is divided into three segments. The first segment is an initial period of flexible exchange rates introduced after the collapse of the Bretton Woods regimes (1972-1978). The second segment covers exchange rate agreements under the EMS/ERM (1979-1992), and this interval is also marked by the frequent depreciation of several currencies and retirement from EMS/ERM. The third period (1993-1999) is characterized by an acceleration of the process of convergence toward the single currency.

The main question addressed here is whether or not Germany is likely to shape a visible currency union in Europe. Germany is the "central" economy of the currency area. This paper cites in its analysis EU countries. However, it also includes those European nations that have not introduced the common currency: Denmark, Sweden and the United Kingdom. (Greece joined the EMU from 2001.) From among the six countries currently negotiating to join

the EU, this paper takes into account just the Czech Republic and Estonia, for which data was available. Additionally, countries that have expressed a willingness to join the EU are included as well: Latvia, Lithuania, and Slovakia. (Bulgaria and Romania were excluded for lack of data). The result is shown in Table 1.

These indices, which collectively can be considered as one optimum currency index, show that there is not much evidence of currency integration with the deutsche mark. It is interesting because the results run counter to the broadly prevalent opinion (ex. Rose and Engel, 2000). Yet convergence has been under way recently. And almost all candidate countries do not satisfy the criteria of the optimum currency area theory. On the other hand, the data confirm the presence of a European economic business cycle following the deepening of monetary integration from the 1990s. This is revealed by looking at the EU case and the three sub-periods, reported in the table, associated with different economic policy regimes in Europe. The approach period for monetary integration, 1979-92, shows a negative indicator in some countries, but after that the condition evolved to confirm a similar business cycle for those as well.

b) The elements of the business cycle

This section analyzes the elements of the business cycle in more detail. Table 2 extends the analysis by considering the different components of demand: consumption, investment, and exports. The estimation is limited for much of the EU due to data availability. Still, it is evident that the increase of the cyclical business correlation affects all demand components, but especially exports.

The disaggregation of the components of demand shows a gradual slowing of the growth rates of consumption and investment, but it is the opposite condition for exports. Exports are the only accelerating element of demand during the 1990s, which indicates greater dependence of the European economic business cycle on

foreign trade. This effect is clearly attributable to the deeper integration that has taken place in Europe (Fantacone and Parascandolo, 2000). These aspects are examined in the next section, which analyzes the relationship between employment and investment. The faster rate of foreign trade is considered in that analysis.

3.   Investment and Employment in Europe

a) Investment, business cycle and EMS (ERM)

Many economists have been saying that an investment shortage is the main macroeconomic problem in the EU[1]. This paper does not analyze the reason why the investment shortage has occurred. It remains a concern, however, and a comparative analysis should be conducted into the extent this is related to high unemployment among the developed countries.

This paper employs empirical analysis to examine the characteristics of investment in Europe. The investments (INVEST) are analyzed econometrically by estimating the following equation (1):

$$INVEST = \alpha_1 + \alpha_2 Y + \alpha_3 t + \alpha_4 EMS \qquad (1)$$

where Y is the rate of GDP change, t is a time trend that summarizes technical progress, and EMS is a dummy variable through which this estimation strives to take into account a specific effect of the monetary or exchange rate regime. If the country participated in the EMS (ERM) at that time, it takes the value 1; it is 0 otherwise. The dummy is inserted into the equation, with reference to the behavior of the different European monetary regimes, to analyze whether monetary integration has contributed to a decline or to a rise in investment.

The results are summarized in Table 3.

A negative correlation between INVEST and Y is not found in most of the countries. It is confirmed only for Belgium, Denmark and Germany, which suggests that, in the other countries, the process of accumulation may be labor-saving regardless of the prevailing demand conditions.

The dummy's result is also interesting. Overall, there does not seem to be any employment-reducing effect linked to monetary integration[2].

b) Promoting employment

This paper also analyzes the relationship between the evolution of employment and monetary integration. The realization of the single currency was accompanied by an increase in exports and by a real appreciation of European currencies against the D-mark. This section considers whether these have had an impact on the employment-investment relationship. To achieve this purpose, the change in employment (EMPLOY) is regressed against the change in investment. And other exogenous variables take into account the increase in the degree of openness, captured by the ratio of exports to GDP (OPENNESS); the trend (Hodrick-Prescott method) of an index of real exchange rate (EXCHANGE) against the dollar in the case of Germany and the D-mark for other European countries; and the dummy variable EMS included as in equation (1). The equation this section estimates is (2).

$$EMPLOY = \alpha_1 + \alpha_2 INVEST + \alpha_3 OPENNESS + \alpha_4 pEXCHANGE + \alpha_5 EMS \quad (2)$$

If this equation fits the model, each coefficient would be as follows. The elasticity of employment to investment is positive, the correlation between employment and the rising degree of openness is also positive, while the correlation with the real exchange rate (mark-dollar) is negative. Estimation results are reported in Table 4[3].

For INVEST, the result is as expected. All the coefficients are positive and significant.

The change in the degree of openness is a negative sign and is significant in some countries. This result also suggests that the changing nature of the European cycle, which implies a larger degree of openness, has produced unfavorable developments in these markets.

Moreover, the negative impact of the real exchange rate against the D-mark also suggests that the evolution of the European exchange rate agreements have had their share in affecting the investment-employment relationship. Further, many countries have negative signs.

The dummy variable is negative in many cases. This indicates that the decision to join the EMS/ERM may have produced a negative impact on employment. Such a result flies in the face of the widely accepted view of the initial EMS period as one of moderate monetary tightening. And this estimation result shows that despite the several successive realignments, that is to say, the currency devaluation that took place in those years, the evolution of the exchange-rate system exerted a negative impact on the relationship between investments and employment. The mechanism that creates employment through the increase of exports did not function well.

4.   Conclusions

The analysis in this paper has confirmed the convergence of the European growth cycles, highlighting that this has been associated with a greater weight of exports in demand creation. The rising weight of exports seems to have partially affected Europe's capacity to create employment. As far as investment is concerned, what has contributed to a deterioration of employment opportunities is not so much the slow-down of investment-output ratios as the increase of investment. Econometric estimation shows that this trend is partly associated with the launching of the EMS with the imposition of an exchange constraint on the European economies as a whole.

Overall, the process of increasing European monetary integration seems to have had a negative impact on employment. The transmission mechanisms are, however, different, and this is an interesting point. In the case of Germany, where an export-led

growth is apparently at work, the constraint of EMS (ERM) has op-
erated through the gradual slowing of demand in Europe, which
feeds back on a lower rate of employment. In the other countries,
the constraint has fed through the channels of productivity in-
creases to recover competitiveness in the face of appreciating cur-
rencies, via substitution of capital of labor.

Finally we may have to take account of wage flexibility, employ-
ment protection legislation (ex. Robinson, 1998), etc. And there
have been quite major variations in the significance of agricultural
and primary production sectors across the EU (ex. Button and
Pentecost, 1999, p.13). However, these questions will be addressed
at another opportunity.

Footnotes

1. Recently, Gordon (1995) says that it can be interpreted as the
   result of a process of adjustment of productivity and capital
   stock to a change in factor prices.
2. Instead of EMS, three dummies: 1) after the collapse of Bretton
   Woods, 2) under EMS/ERM, and 3) the period marked by fre-
   quent depreciation or the retirement from EMS/ERM. However,
   there are no specific characteristics in each period.
3. Gros (1996) regresses the unemployment rate by changes of the
   exchange rate and lags of unemployment.

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Table 1:   *Optimum currency index versus Germany*

	1972–1978	1979–1992	1993–1999
Austria	0.84	0.88	0.90
Belgium	n.a.	–0.57	0.43
Denmark	n.a.	–0.66	0.46
Finland	2.09	0.64	0.76
France	1.57	0.42	0.34
Greece	1.57	0.42	0.54
Ireland	n.a.	–0.17	0.21
Italy	0.64	0.45	0.64
Luxembourg	n.a.	n.a.	n.a.
Netherlands	0.74	0.55	0.67
Portugal	0.73	0.65	0.68
Spain	–0.18	0.33	0.60
Sweden	n.a.	0.48	0.43
United King-	0.22	0.33	0.30

dom			
Czech	n.a.	n.a.	−0.20
Estonia	n.a.	n.a.	0.41
Slovenia	n.a.	n.a.	−0.09
Latvia	n.a.	n.a.	−0.06
Lithuania	n.a.	n.a.	0.15
Slovak	n.a.	n.a.	0.21

Note: Greece is from 1975:2 due to the lack of data. Data is from IFS (IMF), MEI (OECD), and Economic Outlook (OECD).

Table 2:   *Business cycle of GDP components in Euroland countries (coefficient of variation with Germany)*

	1972–1978	1979–1992	1993–1999
Consumption			
Austria	−0.06	0.53	0.85
Belgium	0.12	0.69	0.73
Denmark	0.33	0.41	0.45
Finland	−0.12	0.15	0.08
France	0.69	0.21	0.70
Germany	0.48	0.55	0.50
Greece	n.a.	n.a.	n.a.
Ireland	n.a.	n.a.	n.a.
Italy	0.38	−0.30	0.65
Luxembourg	n.a.	n.a.	n.a.
Netherlands	0.64	0.55	0.64
Portugal	−0.79	0.63	0.89
Spain	−0.60	0.51	0.77
Sweden	0.30	0.44	0.49
United Kingdom	−0.18	0.52	0.61
Investment			
Austria	0.52	0.71	0.64
Belgium	−0.18	0.55	0.77

Denmark	0.22	0.53	0.54
Finland	0.08	0.19	0.22
France	0.51	0.58	0.78
Germany	0.38	0.61	0.51
Greece	−0.12	0.08	0.31
Ireland	0.22	0.24	0.33
Italy	0.30	0.64	0.36
Luxembourg	n.a.	n.a.	n.a.
Netherlands	0.28	0.24	0.03
Portugal	n.a.	n.a.	n.a.
Spain	−0.43	0.55	0.48
Sweden	0.22	0.25	0.34
United Kingdom	0.06	0.44	0.50
Exports			
Austria	0.66	0.55	0.82
Belgium	0.70	0.53	0.62
Denmark	0.51	0.26	0.74
Finland	0.25	0.33	0.48
France	0.60	0.52	0.90
Germany	0.64	0.50	0.91
Greece	0.05	0.13	0.55
Ireland	0.32	0.28	0.46
Italy	−0.12	0.73	0.06
Luxembourg	n.a.	n.a.	n.a.
Netherlands	0.66	0.55	0.91
Portugal	0.16	0.43	0.86
Spain	0.21	−0.22	0.73
Sweden	0.11	0.24	0.41
United Kingdom	0.28	0.35	0.59

Note: *For Germany the numbers in this table are the coefficient of variation with France.*

Table 3: *Econometric specification of investment: 1980 – 1999*

	Constant	Y	t	EMS	Adj.R^2	D.W.	F. stat.

Austria	0.31	0.31	0.01	0.02	0.81	1.66	32.55
	(10.88)	(3.76)	(7.03)	(1.01)			
Belgium	0.13	−0.18	0.01	0.04	0.88	0.99	34.54
	(2.55)	(−0.65)	(7.61)	(2.35)			
Denmark	0.31	−0.12	−0.00	0.03	0.67	1.22	15.64
	(5.78)	(−0.22)	(−7.51)	(1.33)			
Finland	0.22	0.22	0.01	0.01	0.84	1.88	18.75
	(4.43)	(1.19)	(3.34)	(8.82)			
France	0.35	0.39	0.01	−0.01	0.88	2.01	101.87
	(3.88)	(1.06)	(0.34)	(−1.42)			
Germany	0.22	−0.55	0.05	0.08	0.71	0.98	15.32
	(3.44)	(−2.87)	(2.99)	(1.02)			
Greece	0.44	0.33	0.04	0.02	0.72	1.45	16.04
	(4.51)	(2.83)	(3.02)	(0.99)			
Ireland	0.39	0.18	0.06	0.03	0.77	1.92	18.62
	(8.94)	(1.33)	(4.07)	(1.73)			
Italy	0.33	0.44	0.02	0.01	0.87	1.09	99.73
	(9.79)	(3.56)	(5.48)	(1.22)			
Netherlands	0.55	0.61	0.02	0.04	0.79	1.52	20.56
	(5.02)	(1.22)	(3.92)	(1.99)			
Portugal	0.47	0.24	0.04	0.02	0.71	1.55	21.23
	(6.13)	(0.93)	(3.88)	(1.43)			
Spain	0.32	0.58	0.01	−0.34	0.76	1.62	10.57
	(6.67)	(3.73)	(0.23)	(0.32)			
Sweden	0.41	0.39	0.02	0.21	0.73	1.69	12.51
	(5.76)	(4.01)	(0.66)	(1.29)			
United Kingdom	0.28	0.33	0.02	0.34	0.80	2.08	32.45
	(4.64)	(3.23)	(0.71)	(2.10)			

Note: t statistic is in parentheses. Greece is from 1975. Luxembourg is omitted due to data unavailability.

Table 4: *Econometric specification of employment: 1980 – 1999*

	Con-stant	Invest	Open-ness	Ex-change	EMS	Adj.R²	D.W.	F. stat.
Austria	0.01	0.31	0.21	0.09	−0.02	0.75	1.72	12.83
	(0.22)	(6.89)	(2.08)	(0.90)	(−0.80)			
Belgium	0.00	0.08	0.24	−0.02	−0.03	0.66	1.45	8.99
	(0.77)	(5.23)	(3.34)	(−0.55)	(−1.54)			
Denmark	0.02	0.14	0.20	0.02	−0.01	0.61	1.43	8.62
	(1.76)	(5.18)	(4.08)	(1.03)	(−1.02)			
Finland	0.07	0.38	0.01	0.02	0.02	0.69	1.55	8.81
	(3.02)	(5.98)	(0.33)	(0.57)	(1.55)			
France	0.00	0.18	0.04	−0.04	−0.01	0.71	1.22	7.83
	(1.25)	(6.88)	(0.76)	(−1.29)	(−1.97)			
Germany	0.01	0.22	0.23	−0.10	−0.00	0.91	1.68	98.61
	(3.35)	(4.43)	(2.37)	(−7.33)	(−0.75)			
Greece	0.02	0.18	0.06	−0.02	0.01	0.88	1.55	23.86
	(3.83)	(3.88)	(1.01)	(−1.67)	(0.62)			
Ireland	0.03	0.34	0.19	−0.12	−0.01	0.92	11.82	101.22
	(2.59)	(2.45)	(2.39)	(−7.81)	(−0.82)			
Italy	0.01	0.02	−0.03	−0.05	−0.01	0.78	1.55	8.91
	(3.68)	(2.88)	(−2.44)	(−2.37)	(−3.24)			
Netherlands	0.01	0.12	0.12	−0.10	−0.01	0.61	1.48	5.02
	(0.44)	(3.02)	(1.65)	(−0.44)	(−			

					1.55)			
Portugal	0.02	0.18	0.08	−0.22	0.02	0.62	1.52	5.99
	(0.50)	(3.01)	(1.05)	(−0.87)	(1.59)			
Spain	0.01	0.25	−0.02	−0.04	−0.14	0.55	1.45	10.32
	(−0.47)	(5.22)	(−0.81)	(−2.11)	(−1.72)			
Sweden	0.02	0.26	0.12	0.02	−0.02	0.65	1.44	6.54
	(2.44)	(5.67)	(1.61)	(1.98)	(−0.92)			
United Kingdom	0.03	0.35	0.08	−0.01	−0.01	0.66	1.53	9.27
	(1.08)	(5.44)	(0.45)	(−1.42)	(−3.28)			

Note: t statistic is in parentheses. Luxembourg is excluded due to data unavailability.