

Real Convergence in ASEAN and the The Eurozone: Demographic and Maastricht Criteria Roles

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Abstract. This paper investigates the economic performance of ASEAN and the Eurozone regarded real factors (productivity and unemployment) influenced by the role of demographic change and Maastricht Criteria (MC). Based on decomposition analysis, the eurozone has much higher productivity than ASEAN, but ASEAN has higher average productivity growth. Unemployment rate in the eurozone is higher than in ASEAN. Employing panel analysis, the results shows that both the eurozone and ASEAN converged in either productivity or unemployment. All group variables have significant role in determining the convergence.

Keywords: Convergence; ASEAN; The Eurozone; Maastricht Criteria.

1. Introduction

Before crisis hitting eurozone in 2007-2009, creating a common currency represented by European Monetary Union (EMU) seemed good to save the area from financial crisis and economic global uncertainty. The crisis in the eurozone raised a question about future of EMU. Single monetary authority was in the hand of European Central Bank (ECB) with the only target was low inflation. Fiscal policy has remained with members states, pushed the eurozone to create Maastricht Treaty (MT) by releasing MC² (De Grauwe, 2009) and Stability Growth Pact (SGP) with the logic is coherence of fiscal policy to match the single monetary policy. The issue of productivity and unemployment not only resulted from monetary and fiscal policy but also demographic change. The future economic development in any regions will follow the path of demographic change resulted from transition of changing in fertility and life expectancies. Low fertility in Europe and East Asia created negative population growth causing a reduction of the number of children in the population, an increase of the share of the population concentrated in the working ages, a raise of the support ratio and a correspondence raising per capita income (Lee and Mason, 2009).

Considering convergence study by Barro and Martin (1991) and others reviewing the determinants of convergence and economic growth, the objective of this paper is to investigate the economic performance of ASEAN and the eurozone regarding productivity and unemployment influenced by the role of demographic and MC variables. Knowing current condition will give a lesson for ASEAN countries how to formulate a policy in order to achieve convergence, increase the productivity and to reduce unemployment. The empirical study will give policy makers some insight into the impact of MC and demographic variables on productivity and unemployment. The impact of MC and demographic variables will necessary differ from economy given the wide diversity of economic profiles in developed regional integration (the eurozone) with developing regional integration (ASEAN).

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² The Criteria are:

- Inflation rate is not more than 1.5% higher than the average of the three lowest inflation rates of EU members;
- Long-term interest rate is not more than 2% higher than the average observed in these three low-inflation countries;
- Has joined the exchange rate mechanism of the EMS and has not experience devaluation during the two years preceding the entrance into the union;
- Government budget deficit is not higher than 3% of its GDP (if it is, it should be declining close to the 3%)
- Government debt should not exceed 60% of GDP (if it is, it should diminish approach the referenced value.

2. Decomposition Analysis)

The decomposition analysis is following Bloom et.al (2010) method to know the link between per capita income (Y/N) to income per worker (Y/L):

$$\frac{Y}{P} = \frac{Y}{L} \frac{L}{WA} \frac{WA}{P} = \ln y = \ln z + \ln p + \ln w$$

In which Y, P, L, WA respectively are income, population, labor and working age population. After the decomposition we will get the effect of demographic change toward growth.

Table 1 Per Capita Real GDP Decomposition

	Eurozone*			ASEAN**		
	1980-1989	1990-1999	2000-2007	1980-1989	1990-1999	2000-2007
Real GDP per Capita	1.39	2.23	2.10	3.78	4.28	3.79
Decomposition						
Real GDP per Worker	1.08	1.84	1.60	3.22	4.05	3.21
Participation Rate	0.00	0.32	0.46	0.08	-0.18	-0.16
Working Age to Population	0.30	0.07	0.04	0.48	0.42	0.75

*All members of the eurozone **All members except Brunei and Myanmar

We divided the analysis into three periods 1980-1989, 1990-1999 and 2000-2007. The figure indicated that real GDP per worker was dominant factor determining the growth of real GDP per capita, while participation rate was the weakest factor and has negative contribution in ASEAN for period 1990-2007. The figures was in line with the finding of Bloom et al (2010) indicated the faster growth in output per worker will increase the speed of growth in GDP per capita. The picture implied that in ASEAN the increase number of working age people couldn't be absorbed in labor market due to limitation of job opportunity.

3. Data and Model Specification

Ismail (2008) defined unconditional convergence if all countries converge to the same steady state in access to the same preferences in such technology, population and investment but differed in initial level or per capita income; and countries converge conditionally if there are some heterogeneity in several aspects such as policies, investment, education and geography. β convergence is achieved when the coefficient of the initial dependent variable is negatively related with growth of dependent variable. The convergence studies of Kaitila (2005), Chowdhury (2005) and Ismail (2008) mostly found that both EU and ASEAN were converged conditionally, but that were different result for unconditional convergence. The impact of MC toward income convergence and growth in EU was investigated by Soukiazis and Castro (2005) showing that MC has significant impact toward income, productivity, unemployment and investment convergence. Azali et, al (2007) showed a long-run relationship between variables in the MC with growth in ASEAN. Many researchers investigated the role of demographic variable toward either productivity or unemployment, among them Bloom, et. al, (2010), Tyrowicz and Wojcik (2010), Bloom and Finlay (2009) and Bassanini and Duval (2006).

This study tries to find β convergence in productivity (real GDP per labor) of the eurozone countries (Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, Malta, Netherland, Portugal, Spain, Slovakia, and Slovenia) and ASEAN countries (Indonesia, Malaysia, Philippine, Singapore, Thailand, Cambodia, Myanmar, and Vietnam). ASEAN countries that included for unemployment convergence were Indonesia, Malaysia, Philippine, Singapore, Thailand, Brunei and Vietnam.

The data for productivity was from The Conference Board Total Economy Database. Unemployment was from WDI and OECDstat. Investment, Government Expenditure, Openess, and exchange rate were from Unstat. Population growth, participation rate, urban, dependency ratio, life expectancy, density, inflation, and ASEAN interest rate were from WDI. Deficit and public debt for ASEAN were from WEO and OECD for the eurozone. Dummy membership was to capture the effect of length time of joining integration. Not member is 0 and first year is 1, second year is 2 and continuously until n year and dummy crisis was to capture the effect of crisis.

The analysis of convergence is based on Neo-Classic growth theory framework developed mainly by Barro and Sala-i-Martin (1992). Unconditional convergence occurred if countries are similar in every respect

to other than their initial capital stocks, poorer countries will grow faster than wealthier ones. Conditional convergence occurred if we control for the determinant of the steady state. For empirical analysis of productivity convergence, considering the study of Soukiazis and Castro (2005), the equation will be be:

$$\Delta \ln p_{it} = \alpha_0 + \beta_1 \ln p_{i,t-1} + \gamma D + \delta BV + \zeta DV + \eta MV + u_{it} \quad (1)$$

Where D is dummy variables (the length in joining integration, and dummy crisis), BV is basic variable (investment, government expenditure, openness, and population growth), DV is demographic variable (participation rate, dependency ratio, life expectation, density and living in urban), and MV is Maastricht criteria variables (inflation, interest rate, exchange rate, deficit, and public debt). As so productivity the empirical function for Unemployment convergence was:

$$\Delta \ln Unem_{it} = \alpha_0 + \beta_1 \ln Unemp_{i,t-1} + \gamma D + \delta BV + \zeta DV + \eta MV + u_{it} \quad (2)$$

4. Result

In 1990-2009, the eurozone has much higher productivity (64.857) compared with ASEAN (18.578). Some interpretation arose that minimum wage was much higher in eurozone than in ASEAN and labor-capital ratio is much higher in ASEAN which reflecting state of technology (Blanchard, 2004).

Table 2 Productivity Estimated Comparison of Group Variables (1990-2009)

Institution	Eurozone	ASEAN	Institution	Eurozone	ASEAN
Speed of Convergence			Dummy Membership		
Unconditional	-0.0190*	-0.0748*	Random Effect		Fixed Effect
With Dummy	-0.0096***	-0.1572*	Dummy Membership	Insig	0.0032**
Basic Variables	-0.0106***	-0.3029*	Barro Variables	Insig	0.0061*
Demographic Variables	-0.1522*	-0.4384*	Demographic Variables	Insig	0.0058***
Maastricht Variables	-0.1080*	-0.3656*	Maastricht Variables	Insig	0.0075*
Adjusted R-Square			Dummy Crisis		
Unconditional	0.0469	0.0688	Random Effect		Fixed Effect
With Dummy	0.186	0.2227	Dummy Crisis	-0.0246*	-0.0755*
Basic Variables	0.2144	0.3811	Barro Variables	-0.0243*	-0.0589*
Demographic Variables	0.3696	0.45	Demographic Variables	-0.0209*	-0.0528*
Maastricht Variables	0.478	0.531	Maastricht Variables	-0.0227*	-0.0391**
F-Statistics			Basic Variables		
Unconditional	16.7150*	2.4664**	Random Effect		Fixed Effect
With Dummy	25.3027*	5.4256*	Investment	0.0009**	0.0027*
Basic Variables	13.4383*	7.5845*	Government	Insig	Insig
Demographic Variables	7.8834*	7.1826*	Openness	8.55E-05*	0.0003***
Maastricht Variables	11.2094*	9.7437*	Population	-0.0059**	-0.0182*
<i>Note: *Significance in 1%, ** in 5%, and *** in 10%</i>			Demographic Variables		
<i>Source: Own Calculation using E-Views</i>			Fixed Effect		Fixed Effect
			Participation Rate	Insig	-0.0203*
			Dependency Ratio	-0.0037*	Insig
			Life Expectation	0.6643*	Insig
			Density	-0.1697*	-0.2314**
			Urban	Insig	0.0070*
			Maastricht Variables		
			Fixed Effect		Fixed Effect
			Inflation	-0.0017*	Insig
			Interest Rate	-0.0011**	-0.0018***
			Exchange Rate	-0.0139**	-0.0220***
			Deficit	Insig	0.0058*
			Public Debt	-0.0076**	-0.0003**

Looking at table 2, both are converged unconditionally and conditionally which is in line with finding of Kaitila (2005), Vojinovic and Prochniak (2009), Chowdhury (2005), Ismail (2008), and Soukiazis and Castro (2005). For unconditional convergence, ASEAN (7.5%) had faster speed than the eurozone (1.9%). For conditional convergence, the highest speed achieved when the model augmented by demographic variables (15.22% for eurozone and 43.84% for ASEAN). MC variables had most influent role indicated by adjusted-R square (53.1% in ASEAN and 47.8% in eurozone). This result implied that implementing MC in eurozone was precondition to ensure the stability to achieve high productivity as proposed by Marelli and Signorelli (2010) that satisfying MC in the eurozone will bring to nominal convergence and gradually leads to real convergence.

Joining eurozone had no impact for productivity but joining ASEAN had positive effect. The impact in the eurozone was in line with Castro (2010) indicated the weakness of synchronization between fiscal and monetary policy and almost no way to go further into political union needed to synchronize fiscal policy,

labor and welfare system. For ASEAN, the potency of ASEAN as an emerging market combined with commitment to achieve ASEAN economic community (AEC) by 2015 gave positive impact toward productivity (Ismail, 2008). The impact of crisis for productivity was painful in both areas. For eurozone the loss of sovereignty in monetary policy and not provision for fiscal transfer across the eurozone made more severe moreover it was not allowed by SGP to go into deficit. Government expenditure had no role in productivity in both areas, for MC variables deficit had not role in eurozone and so inflation in ASEAN.

During 1991-2009, unemployment rate in eurozone was 8% which is higher than in ASEAN (5%) this fact as denoted by Ljungqvist and Sargent (2008) that after 1970s unemployment in the eurozone is persistently high. Lower unemployment rate in ASEAN could be understood since we could not include Cambodia, Myanmar and Laos into equation due to data limitation. Overall, the convergence coefficient is negative and statistically significant both in eurozone and ASEAN. The rate of convergence in ASEAN is higher either unconditionally or conditionally. For unconditional convergence the speed in ASEAN was 39.8% and in the eurozone is 20.6%. In eurozone and ASEAN, the highest speed achieved when the equation augmented by demographic variables. MC variables were the most determinant variables for explaining the variation of unemployment growth in eurozone and demographic variables was the highest in ASEAN.

Table 3 Unemployment Estimated Comparasion of Group Variables

Institution	Eurozone	ASEAN	Institution	Eurozone	ASEAN
Speed of Convergence			Dummy Membership		
Unconditional	-0.2059*	-0.3980*	Dummy Membership	-0.0061***	Insig
With Dummy	-0.2022*	-0.1070*	Barro Variables	Insig	Insig
Basic Variables	-0.3087*	-0.4368*	Demographic Variables	Insig	-0.0457***
DV	-0.3981*	-0.7128*	Maastricht Variables	Insig	-0.0234**
MV	-0.2691*	-0.6464*	Dummy Crisis		
Adjusted R-Square			Fixed Effect		
Unconditional	0.1104	0.1935	Dummy Crisis	0.1173*	0.1806***
With Dummy	0.1392	0.0577	Basic Variables	Insig	Insig
Basic Variables	0.3482	0.2332	Demographic Variables	Insig	Insig
Dummy Variables	0.3912	0.3589	Maastricht Variables	Insig	Insig
Maastricht Variables	0.4876	0.3096	Basic Variables		
F-Statistics			Fixed Effect		
Unconditional	3.3032*	5.5238*	Investment	-0.0252*	-0.0111*
With Dummy	3.6679*	3.6948**	Government	0.0506*	Insig
Basic Variables	8.2124*	4.0883*	Openess	Insig	Insig
Dummy Variables	8.0209*	5.0125*	Population	-0.0487***	Insig
Maastricht Variables	11.1500*	4.2883*	Demographic Variables		
<i>Note: *Significance in 1%, ** in 5%, and *** in 10%</i>			Fixed Effect		
<i>Source: Own calculation using E-Views</i>			Fixed Effect		
			Participation Rate	-0.0235**	Insig
			Dependency Ratio	Insig	Insig
			Life Expectation	Insig	13.0483*
			Density	1.8123*	Insig
			Urban	-0.0150**	Insig
			Maastricht Variables		
			Fixed Effect		
			Inflation	-0.0146*	Insig
			Interest Rate	Insig	Insig
			Exchange Rate	Insig	0.4662*
			Deficit	-0.0205*	Insig
			Public Debt	Insig	0.0029**

Long time joining integration has no role in ASEAN but it was reducing factor of unemployment rate in eurozone. Crisis is harmful for employment in both areas. In line with theory, investment was important factor in creating job opportunity and lowering unemployment rate (Sokiazis and Castro, 2005) as the result showed it significant role in reducing unemployment growth. For eurozone investment, government expenditure, population growth, participation rate, density, living in urban, inflation and deficit were determinant variables in explaining the change of unemployment growth. For ASEAN only investment, life expectation, exchange rate and public debt had role in influencing unemployment.

5. Conclusion

All group variables have significant role shown by significant F-value although there are many insignificant variables for unemployment growth. Decomposition result showed that labor productivity was dominant factor determining the growth of real GDP per capita, while participation rate has negative contribution in ASEAN for period 1990-2007. Investment in real sectors was needed since it had significant value in both area in spurring productivity and reducing unemployment. Deeper integration by lowering

tariff and improving trade will be favorable for its significant in pushing productivity besides maintaining population growth to keep the productivity growth was in line with the decline trend of dependency ratio.

The significance of MC to ensure the stability was relevant since recent crisis suffered by eurozone. In line with De Grauwe (2010) argument indicating the Greece government credibility problem, financial market speculation, and eurozone authority's ambiguities have most contribution making the eurozone future was questionable. Many analysts argued that the only lack in the eurozone is political unification (especially in conducting fiscal policy) without it eurozone has no bright future. Although Stability and Growth Pact (SGP) tried to strengthen, MC has asymmetrical structure since eurozone countries have supranational monetary policy, but national financial policy. Therefore since political union is hard to achieve at least establishing minimum standard (obeying MC and SGP) was needed besides forcing incentive and sanction.

ASEAN intention to fully implement AEC by 2015 should learn from the eurozone with MC to achieve nominal convergence transformed to real convergence. It will avoid that the cost of deeper integration is higher than its benefit. MC was determinant factor influencing productivity and unemployment the criteria have significant and key roles in absorbing shock as recent crisis suffered by Greece showed it. Therefore with some accomplishing with incentives and sanctions, ASEAN can use MC either for economic stability or going into deeper economic integration.

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