Productivity and Unemployment Convergence in the Eurozone and ASEAN: A Comparative Study Based on Demographic and Maastricht Criteria Roles

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Abstract—**This study mainly tests the role of demographic and Maastricht Criteria (MC) variables using various approaches to analyze comparatively the difference of productivity and unemployment convergencebetween developed economic integration (Eurozone) with developing one (Association of Southeast Asian Nation or ASEAN) a decade before and after the Euro introduced. Employing β convergence approach with panel data analysis, group variables played important role in both areas. The result confirmed the existence of unconditional productivity convergence in the both zones. When the equation controlled by other variables the magnitude in ASEAN was higher in all estimation showing the catch-up process taking place in ASEAN. The degree of explanation of the estimate convergence improve higher and also the degree of convergence when the conditioning factors were MC variables. Unconditional and conditional unemployment convergence took place in both regions. Better condition and higher speed of convergence in ASEAN was supported by descriptive Fig. and decomposition approach. The lesson learned from Eurozone as ex-ante and ex-post process was relevant with ASEAN intentionto implement fully ASEAN Economic Community (AEC) by 2015.**

Index Terms—**ASEAN, convergence, maastricht criteria, the eurozone.**

I. INTRODUCTION

Before Eurozone crisis exploding in 2007, creating a common currency performed by European Monetary Union (EMU) seemed good to save the area from financial crisis and economic global uncertainty. Unfortunately recent 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, but fiscal policy has remained with member states. This condition pushed the Eurozone to create Maastricht Treaty (MT) by releasing MC and Stability Growth Pact (SGP) with the logic is a coherence of fiscal policy to match the single monetary policy. The aim of the treaty was to push area into nominal convergence transformed gradually into real convergence [1].

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 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 [2]. Thus, the wide gap in demographic aspects could induce huge disparity.

The objective of this analysis is comparatively testing the determinacy of demographic and MC variables on productivity and unemployment convergence by comparing the Eurozone and ASEAN.To enrich the analysis, we employ[3] method to catch the channel between real per-capita GDP with productivity.Toanswer main objective, we apply Solow model and follow β convergence approach of [4] and others reviewing the determinants of convergence and economic growth. The contribution of this study mainly was the break ground study to investigate productivity and unemployment convergence by comparing a developed regional organization (the Eurozone) with a developing one (ASEAN). It also tries to confirm the benefit of imposing MC on regional implementing the criteria with another as a policy evaluation. The improvement relatively to previous work was employing decomposition analysis as an additional approach. The result will be beneficial especially for ASEAN to maintain sustainability of regional economic integration mainly based on Eurozone experience as ex-ante and ex-post lesson.

II. THEORETICAL BACKGROUND

As the main purpose of this study was to asses convergent condition, Ismail [5] 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 appeared when the coefficient of the initial dependent variable is negatively related with growth of dependent variable. The convergence studies of [5]-[7] mostly found that both EU and ASEAN were converged conditionally, but that were different result for unconditional convergence.

Among conditional variable determining convergence, the change in demographic structure played important rule for productivity and convergence as summarized in [8]about three main hypotheses of the impact of demographic variables on growth. First was called "population pessimists" who believed that rapid population growth is deteriorating because it tends to overwhelm and induced response by technological progress and capital accumulation. Second

view "population optimists" believing that rapid population growth allows countries to capture economies of scale and promotes technological and institutional innovations. The last was called "population neutralists" showing that changes in fertility and mortality imply very different changes in the age distribution and points on hypothesis that population growth affect economic growth insofar as it affects the ration on working age population to dependent population. Persson [9] found that the age structure of the entire population affect output; and Sareal [10] implied a significant effect of the age structure of the population on output in a cross section of countries. Feyrer [11] indicated that the change in workforce has a strong and significant impact on the growth rate of productivity and dependency ratio has no influence on productivity. Bloom and Finlay [12] found the significant of demographic transition in East Asia growth; labor force growth has significant and positive influence on growth as so working age population and life expectancy. Bloom, et al [3], investigating the impact of demographic change on growth, found that conditional income convergence existed both in China and India, working age population has positive impact on growth and so life expectancy. Ljungqvist and Sargent [13] investigating the reason of systematic high unemployment in Europe and found that Europe has strong employment protection and more generous unemployment insurance. Tyrowicz and Wojcik [14], using β convergence approach, found no unconditional unemployment convergence, rural not significant, youth percentage was significant, percentage of over 50 age people contributed negatively.

Other important variables were policy tools in which MC variables. The criteria imposed in The Maastricht Treaty were to equalize some nominal variable transforming into real convergence process. The Criteria are[15]:

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

The criteria in MT was based on principles of gradualism and to capture some of OCA properties with the main reason was to diminish asymmetric shock and to increase a similarity in policy response to shock as Perez-Caldentey and Vernengo [16] highlighted that exchange rate convergence was set to avoid the manipulation of the exchange rate in order to achieve an improved competitiveness; inflation and budget convergence were the avoidance of an inflationary bias; fiscal criteria required to balance members' budget or be in surplus position in the medium run in order to offset deficits in bad times; and interest rate criteria was required to limit the opportunities of capital gains and losses prior to entry.

Soukiazis and Castro [17]investigating the relation of

Maastricht variables with real convergence in EU found that no absolute convergence in productivity in Eurozone; convergence existed when the equation controlled by MC. They also found that EU's unemployment converged unconditionally and conditionally. Afxentiou and Serletis [18] found the significance of MC in promoting economic growth. Papaioannou [19], investigating the influence of SGP Criteria, denoted that inflation has significant negative impact on growth; deficit and debt had no impact. He also found that fulfilling SGP has positive and significant effect on unemployment. Baskaran [20],implied that joining EMU has influence on growth of GDP but has no impact on unemployment. Castro [21], using dynamic fixed effect panel found conditional convergence in EU, transformation into Euro was not harmful to growth, and the inflation variation has impact on growth only in the long-run. The study of [22] confirmed that imposing MT has impediments to reduce unemployment.

Departing from the existing literatures, this study intended to provide a clear empirical answer to question of whether MC variables, demographic variables, and typical input variables had affected real convergence in ASEAN and Eurozone.

III. DESCRIPTIVE ANALYSIS

Using World Bank definition, productivity in this study was measured in terms of output per input of labor. Fig. 1 described that productivity was differ between countries in the Eurozone. The data indicted growing trend of productivity in the Eurozone, but declined slightly starting in 2007 due to recession suffered by some Eurozone countries.
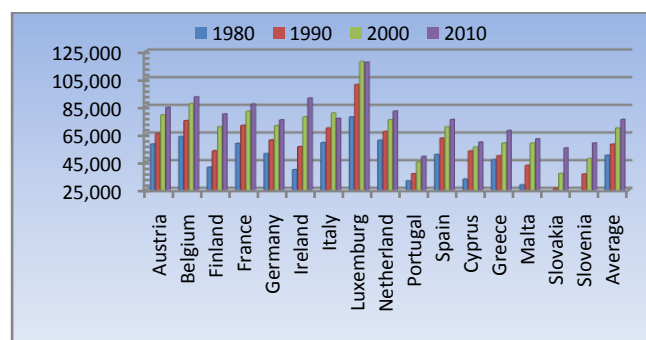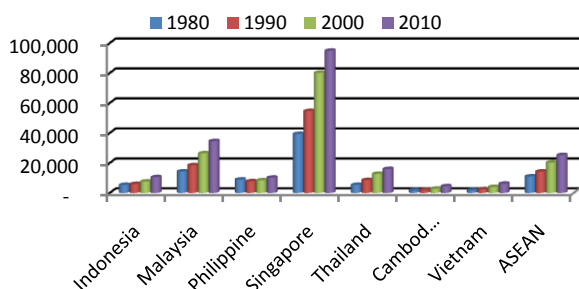

Source: The Conference Board Total Economy Database™, September 2011, in US$

Fig. 1. Labor productivity in the eurozone (1980-2010)

In 1980-2010, average Eurozone's labor productivity was 63,543. Luxembourg (104,454) was an extraordinary country for its highest labor productivity; while Slovakia (37,534) has the lowest one. Ireland has the highest productivity growth (83%) and Italy has the lowest (26%).In ASEAN, Fig. 2 suggested that Singapore was the extremely highest productive country in ASEAN for its extreme difference with other countries. On average ASEAN labor productivity was 15,512, Singapore had the highest (66,506) and Cambodia was the lowest (2,612). A huge gap especially between Singapore and other member countries reflected wide differences in competitiveness. Vietnam had the highest growth,starting from only 1,848finallyit was 6,154 or more than triple growths. In contrast, Philippine was the lowest in

the area since in 1980 its productivity growth was 8,914, and now it was only 10,179 or only grew 13.26%.

Source: The Conference Board Total Economy Database™, September 2011, in US$

Fig. 2. Labor productivity in ASEAN (1980-2010)

The average labor productivity in the Eurozone (63,543) was much higher than it in ASEAN (15,512) or more than four times, but ASEAN has higher annual growth or 2.83% than 1.41% in Eurozone or twice higher. Overall the Eurozone grew 42.36% while ASEAN grew 84.8%. Luxembourg had 69,919 point difference with Slovakia as the lowest. In ASEAN, Singapore had 63,814 point difference with Cambodia as the lowest; however, the gap in ASEAN rapidly narrowed for rapid growth especially in new member countries as the new emerging market.

Unemployment disparities are often perceived as constant caused by stable equilibrium differentials. Labor market adjusts toward equilibrium in the long-run; there was convergence in regional unemployment rates due to unemployed workers took jobs in other areas or because capital flew into a low-wage region to take advantage of lower labor costs [23]. However, if the speed of adjustment was slow, unemployment disparities might arise during adjustment as a result of negative demand shocks affecting some regions more than others.
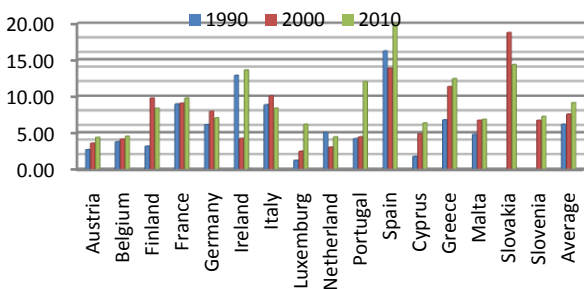

Source: OECD Stat online database, in percentage

Fig. 3. Unemployment rate in the eurozone (1991-2010)

The Fig. implied that at the beginning, Eurozone unemployment rate was 6.20% with Spain as the highest (16.24%). On average, Spain has the highest rate (15.75%) and Luxembourg was the lowest (3,4%) with Eurozone average (7.9%). The Fig. was in line with the finding of [13] indicating that in Europe unemployment after 1970s became persistently high. Unemployment in Spain and Ireland declined rapidly at the end of the 1990 but increased when the crisis. Spain touched high unemployment rate in 2010 as in early 1990s, which were above 20%,

Fig. 4 showed that unemployment rate in Philippine

fluctuating around 7-12%, and it was stubbornly low in Thailand fluctuating around 2%. On average unemployment rate in ASEAN was 5% with Philippine (9.5%) as the highest and Thailand (2.4%) as the lowest.
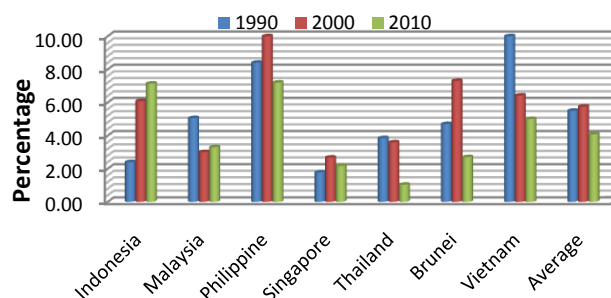
Source: World Bank, World Development Indicator (WDI), in percentage

Fig. 4. Unemployment rate in ASEAN (1991-2010)

Unemployment rate in the Eurozone (6.2%) was higher than it in ASEAN (5%). The annual growth rate in Eurozone was 2.1% while in ASEAN was -0.9%. The performance of ASEAN unemployment rate was clearly better than in the Eurozone since totally during 1991-2010, ASEAN experience unemployment decreasing rate 17.9% in contrast with the Eurozone suffering from the increasingtrend(39.73%). The gap in the Eurozone between Luxembourg as the lowest with Spain (12.4 point) was also higher than it in ASEAN (4.62 point) between Thailand and Vietnam.

IV. DATA AND MODEL SPECIFICATION

This study tries to find *β* convergence in productivity and unemployment in the Eurozone and ASEAN countries. Data for productivity was from The Conference Board Total Economy Database. Unemployment was from World Bank (World Development Indicator or WDI) and OECD statistic online database. Investment, Government Expenditure, Openness, and exchange rate were from United Nation Statistic. 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 IMF (World Economic Outlook) 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 respectively until n year and dummy crisis was to capture the effect of crisis. Following [4] the equation for unconditional convergence would be:

$$\Delta \ln p_t = \alpha + \beta \ln p_{i,t-1} + v_{i,t} . \qquad (1)$$

where *p* was labor productivity, *α* was constant variable, *β* was coefficient indicating convergence, *t* indicates the time interval, (t-1) is the initial of the time interval, *v* indicates error term. To capture the level of unconditional convergence using *β* convergence term, we test the hypothesis that

$$H_0 = e^{gt} = p^{\beta}{}_{t-1}$$

where *e* was exponential, and *g* was the growth.

$$gt = \ln p_t - \ln p_{t-1} = \Delta \ln p_t$$
$$\Delta \ln p_t = \beta \ln p_{t-1}$$
$$\Delta \ln p_t = (1+\beta)\ln p_{t-1}$$

The hypothesis suggests that unconditional convergence is hold when the coefficient of the initial dependent variable is negative between 0 and -1. If $\beta>0$ then p_t will explode as so if $\beta<-1$. Unconditional convergence could be defined if income convergence occurred for the whole group without conditioning on specific characteristics of the countries but if it occurred only among a subgroup of the countries that in advance share the same structural characteristics than it was conditional convergence [24]. Since determinants of economic growth differ across countries, Barro and Sala-i-Martin [4] favored the notion of conditional convergence:

$$\Delta \ln p_t = \alpha + \beta \ln p_{i,t-1} + \gamma X_{i,t} + v_{i,t} \ . \quad (2)$$

In term of equation (2) a significant negative β higher than -1 implies convergence holds conditionally when $\gamma \neq 0$. In empirical analysis, we employed equation of [4] including investment, government expenditure, openness, and population growth; [17] augmenting MC and [3] augmenting demographic variables as control variables. Also we imposed dummy membership of joining euro for Eurozone countries and joining ASEAN for ASEAN members; and also dummy crisis 2009 for Eurozone and 1998 for ASEAN.

As in productivity equation, the equation for unconditional unemployment convergence could be:

$$\Delta \ln u_t = \alpha + \beta \ln u_{i,t-1} + v_{i,t} \quad (3)$$

And for unemployment conditional convergence as [25], I imposed same determinant variables as productivity convergence equation:

$$\Delta \ln u_{i,t} = \alpha + \beta \ln u_{i,t-1} + \gamma X_{i,t} + v_{i,t} \quad (4)$$

The countries included into equation are all Eurozone countries except Estonia (Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, Malta, Netherland, Portugal, Spain, Slovakia, and Slovenia) and (Indonesia, Malaysia, Philippine, Singapore, Thailand, Cambodia, and Vietnam) for productivity in ASEAN. Countries that included for unemployment convergence were Indonesia, Malaysia, Philippine, Singapore, Thailand, Brunei and Vietnam.

V. RESULT

A. Productivity Convergence

Table II showed unconditional β convergence was existed in the Eurozone with the speed 2% as and the result confirmed the finding of [24]. When augmented with dummy membership variable, the speed was lesser (1.2%) and joining had no significance. Recent crisis made the productivity worse off. Incorporating Input Variables the speed of convergence was increased (1.46%) with openness gave positive influence; and population growth had negative one; however, investment and government expenditure had

no significant role.

The estimate result depicted that the demographic role was significant. The speed of convergence increased into 13%. Table 2 described the negative influence of population in Eurozone confirmed "the population pessimist" views as summarized by [8], since it tend to overwhelm and induced response by technological progress. All demographic variables could not be ignored since individually had significant impact in determining productivity. In line with [9]-[11], and [3], life expectation and living in urban contribute positively; density was negative; and dependency ratio has negative role.

TABLE I: PRODUCTIVITY CONVERGENCE COMPARISON: 1990-2010

Institution	Eurozone	ASEAN
Speed of Convergence		
Unconditional	-0.0201*	-0.0048**
With Dummy	-0.0125**	-0.1157*
Input Variables	-0.0146**	-0.2556*
Demographic Variables	-0.1301*	-0.3713*
Maastricht Variables	-0.1233*	-0.3137*
Adjusted R-Square		
Unconditional	0.0467	0.0203
With Dummy	0.1867	0.1835
Input Variables	0.2109	0.3597
Demographic Variables	0.3616	0.3923
Maastricht	0.4999	0.4833
F Stat		
Unconditional	17.4024*	1.4323
With Dummy	26.6371*	4.6462*
Input Variables	13.7899*	7.3079*
DV	8.0291*	6.2362*
MV	12.7376*	8.5862*

*Note: *Significance in 1%, ** in 5%, and *** in 10%*

Among MC variables inflation and interest as so in [17], [19], and [21] had negative role on productivity. The same result also indicated by negative role of public debt; therefore high debt ratio in some Eurozone countries could be harmful for growth and why MT incorporate those variables into criteria. The speed of convergence increased into 12.3% when we incorporate MC as it also had most important role in determining productivity convergence in area. Adjusted R-Squared was higher when the model augmented by MC (49.9%) than by demographic variables (36.16%).

Unconditional convergence was existed in ASEAN based on the table 1 as supported by neo-classic assumption. Membership had no effect, but crisis significantly painful for ASEAN. Applying Input Variables, the speed of convergence was increasing which implied that ASEAN conditionally converged with the speed is 25.56%. Investment and openness had positive impact and population growth had negative influence as suggested in [12] that the association between population growth and per capita growth was negative for positive effects of scale and induced innovation. Government expenditure had no influence. Among demographic variables as so in the Eurozone life expectation has positive impact and density had negative influence. The speed of convergence increased into 37.13% when demographic variables incorporated. Insignificant result of dependency ratio could be from the dominance of family supporting system. Augmenting MC variables indicated inflation and deficit had a positive role, and public debt was

negative. Comparing all models, we saw that MC had highest influence to determine productivity convergence since it had higher adjuster-R (48.33%) than demographic variables (39.23%).

<div align="center">TABLE II: PRODUCTIVITY ESTIMATE RESULT: 1990-2010</div>

Institution	Eurozone	ASEAN
Dummy Membership	**Random Effect**	**Fixed Effect**
Dummy Membership	Insig	0.0027***
Barro Variables	Insig	0.0048*
Demographic Variables	-0.0018*	0.0084**
Maastricht Variables	Insig	0.0074**
Dummy Crisis	**Random Effect**	**Fixed Effect**
Dummy Crisis	-0.0362*	-0.0843*
Barro Variables	-0.0356*	-0.0658*
Demographic Variables	-0.0319*	-0.0533*
Maastricht Variables	-0.0402*	-0.0506*
Input variables	**Random Effect**	**Fixed Effect**
Investment	Insig	0.2385*
Government	Insig	Insig
Openness	0.0089*	0.0360**
Population	-0.0058**	-0.0208*
Demographic Variables	**Fixed Effect**	**Fixed Effect**
Participation Rate	-0.0020**	Insig
Dependency Ratio	-0.0027*	Insig
Life Expectation	0.0100*	0.0154**
Density	-0.0004*	-7.83E-05*
Urban	0.0019*	Insig
Maastricht Variables	**Fixed Effect**	**Fixed Effect**
Inflation	-0.0029*	0.0004***
Interest Rate	-0.0010***	Insig
Exchange Rate	Insig	Insig
Deficit	Insig	0.0054*
Public Debt	-0.0002**	-0.0003**

-*,**, and *** denotes values significant at the 1%, 5%, and 10% levels, respectively
-The usage of Fixed or Random Effect based on LR and Hausman Test
Source: Own calculation using E-Views

In 1980-2010, the Eurozone had much higher productivity (63,543) compared with ASEAN (15,512). Some interpretations arose from that minimum wage was much higher in Eurozone than in ASEAN and labor-capital ratio was much higher in ASEAN, which reflecting state of technology [25], thus inducing faster catch-up process. Although there was a huge gap in ASEAN since the gap between the highest (Singapore) with the lowest (Cambodia) more 33 times compared with the gap in Eurozone only 2.7 times, average productivity growth in ASEAN (3.5%) was higher than it in Eurozone (1.5%). Looking at table 1, both areas converged unconditionally and conditionally, which was in line with finding of [5]-[7], [17], and [24]. For conditional convergence, the highest speed achieved, in which the equation augmented by demographic variables (13.01%) in the Eurozone and 37.13% in ASEAN.

The higher speed of convergence in ASEAN spurred higher real per-capita GDP growth as explained through the approach of [6] correlating between real per-capita GDP (Y/Pop) with demographic factors:

$$\%\Delta\frac{Y}{Pop} = \%\Delta\frac{Y}{L} + \%\Delta\frac{L}{WA} + \%\Delta\frac{WA}{Pop}$$

In which Y, Pop, L, WA respectively are income, population, labor, and working-age population.

Table III indicated that ASEAN's growth of real per-capita GDP was higher than it in Eurozone. The best condition in both areas was in 1990-1999. Productivity became dominant

factor supporting the growth of real GDP per capita, while participation rate was the weakest factor and has negative contribution in ASEAN for period 1990-2010. The Fig.s confirming the regression result and the finding of [3] indicated that the faster growth in productivity will increase the growth speed of per-capita GDP. The decreasing trend of participation rate in ASEAN suggested that the development of middle and higher-education system in ASEAN pushed working-age people to continue schooling than working. Since the Eurozone suffered from ageing problem, contribution of working-age population was closed to zero especially after 1990s, and it will be difficult for those countries to support growth. Contrasting with ASEAN, the increase trend in participation rate implied that reduction unemployment benefit in the area pushed working-age people to participate in the job market.

<div align="center">TABLE III: PER CAPITA REAL GDP DECOMPOSITION</div>

	Eurozone*			ASEAN**		
	80-89	90-99	00-10	80-89	90-99	00-10
Real per-capita GDP	1.39	2.23	1.20	3.78	4.28	3.79
Decomposition						
Productivity	1.08	1.84	0.85	3.22	4.05	3.24
Participation Rate	0.00	0.32	0.32	0.08	-0.18	-0.03
Working Age	0.30	0.07	0.03	0.48	0.42	0.58

*All members of the Eurozone **All members except Brunei, Laos and Myanmar.*

MC variables played most influent role indicated by adjusted-R square (48.33% in ASEAN and 49.99% in the Eurozone). This result implied the importance of MC in the Eurozone as a preconditioned to ensure the stability (especially price stability) in order to achieve productivity convergence. Marelli and Signorelli [1] proposed that satisfying MC in the Eurozone will bring to nominalconvergence and gradually leads to real convergence.

Long time joining regional organization has different influence on productivity. It has no influence in the Eurozone but it has positive impact in ASEAN. The absent impact of joining Eurozone was in line with [21] indicatingthe weakness of policy coordination between fiscal and monetary policy and almost no way to go into a political union needed in order to synchronize fiscal policy, labor and welfare system. In reverse, ASEAN havingmarket potency with more than 600 million people as an emerging market combined with commitment to achieve ASEAN economic community by 2015 gave positive impact on productivity [5]. Therefore, it has higher potency to growth faster than the Eurozone where the market already matured. The impact of crisis for productivity was painful in both regions. Mishkin [26] stressed that The Asian economic crisis in 1998 was not only harmful but also put the global financial system under huge recession. For Eurozone crisis, centralized monetary policy and decentralize fiscal policy put difficulty for member states to deal with crisis.

B. Unemployment Convergence

Both unconditional and conditional β convergence (Table 4) were existed in the Eurozone since the regression result of initial unemployment was not exceeding unity and in all estimation are significantly negative. The speed of convergence was 17.44% for unconditional, and it has been

highest when augmented with input variables (24.91%). The existence of convergence confirmed the finding of [17], and [20]. Membership has no role for unemployment, but the crisis significantly increased the growth of unemployment. Investment had a power to reduce unemployment; government expenditure and openness had significant impact on unemployment growth. Concerning the effect of demographic variables on the unemployment convergence, the regression result in table 5 suggested individually only density has role which was negative. Employing MC variables into the model indicated that inflation rate and deficit had impact on decreasing unemployment; others were insignificant. The result confirmed [22] that imposing MC in the Eurozone had impediments to reduce unemployment. Among group variables, MC variables were the most determinant variables in explaining the fluctuation of unemployment due to the highest adjusted-R squared (50.03%).

TABLE IV: UNEMPLOYMENT CONVERGENCE COMPARISON: 1991-2010

Institution	Eurozone	ASEAN
Speed of Convergence		
Unconditional	-0.1744*	-0.4275*
With Dummy	-0.1572*	-0.4152*
Input Variables	-0.2491*	-0.4612*
Demographic Variables	-0.2305*	-0.6323*
Maastricht Variables	-0.2122*	-0.6457*
Adjusted R-Square		
Unconditional	0.0896	0.2012
With Dummy	0.1945	0.1926
Input Variables	0.3961	0.2142
Demographic Variables	0.4031	0.3182
Maastricht Variables	0.5003	0.2821
F Stat		
Unconditional	2.9373*	5.9653*
With Dummy	5.2255*	4.6569*
Input Variables	10.3931*	3.8928*
Demographic Variables	8.8814*	4.5787*
Maastricht Variables	12.2739*	4.0123*

Note: *Significance in 1%, ** in 5%, and *** in 10%

In line with the Eurozone, convergence also existed in ASEAN since the regression result of previous unemployment rate was negative and not exceeding unity. The result expressed that the speed of unconditional unemployment convergence was 42.75%. When dummy membership included into equation, it had no role in determining unemployment, and crisis increased the growth of unemployment. The highest speed of convergence was existed when MC were augmented into equation (62.67%). Augmenting Input Variables, investment had significant contribution in reducing unemployment growth; however, the government expenditure, openness and the increase number of population had no contribution to the change of unemployment growth. Among demographic variables, the increase number of dependency ratio significantly increase unemployment rate; and density and living in urban had significant influence on the growth of unemployment as shown in table 5. Employing MC variables, exchange rate and public debt had significant role in determining unemployment rate. The appreciation of currency and the increase of public debt would push the growth of unemployment rate. Overall demographic variables were the most determinant variables for the change of unemployment rate as adjusted-R squared was the highest (31.82%).

TABLE V: UNEMPLOYMENT ESTIMATE RESULT: 1991-2010

Institution	Eurozone	ASEAN
Dummy Membership	**Fixed Effect**	**Random Effect**
Dummy Membership	Insig	Insig
Input Variables	Insig	Insig
Demographic Variables	Insig	-0.0884*
Maastricht Variables	Insig	-0.0225*
Dummy Crisis	**Fixed Effect**	**Random Effect**
Dummy Crisis	0.2240*	Insig
Barro Variables	0.1282*	Insig
Demographic Variables	0.1206*	Insig
Maastricht Variables	0.0888*	Insig
Input variables	**Fixed Effect**	**Fixed Effect**
Investment	-2.0729*	-1.0634**
Government	4.4067*	Insig
Openness	Insig	Insig
Population	Insig	Insig
Demographic Variables	**Fixed Effect**	**Fixed Effect**
Participation Rate	Insig	Insig
Dependency Ratio	Insig	-0.0280***
Life Expectation	Insig	Insig
Density	-0.0016**	0.0007*
Urban	Insig	0.0516*
Maastricht Variables	**Fixed Effect**	**Fixed Effect**
Inflation	-0.0084***	Insig
Interest Rate	Insig	Insig
Exchange Rate	Insig	7.44E-05*
Deficit	-0.0119*	Insig
Public Debt	Insig	0.0035*

-*,**, and *** denotes values significant at the 1%, 5%, and 10% levels, respectively
-The usage of Fixed or Random Effect based on LR and Hausman Test
Source: Own calculation using E-Views

Unemployment rate in the Eurozone (8%) was higher than it in ASEAN (5%) this fact as denoted by [13] that after 1970s unemployment in the Eurozone was persistently high for its' generosity in welfare system. In all estimations, the convergence coefficient was negative and statistically significant both in Eurozone and ASEAN as suggested by [17]. The speed of convergence in ASEAN was higher either unconditionally or conditionally. For unconditional convergence, the speed in ASEAN was 42.75% and in the Eurozone was 17.44%. In Eurozone the highest speed achieved when the equation augmenting demographic variables (23.05%) and in ASEAN, the highest speed achieved when we employed MC variables (64.57%). MC variables were the most determinant variables for explaining the variation of unemployment growth in Eurozone and demographic variables were the highest in ASEAN as denoted in table 4. Lombard [22], Bassanini and Duval[27] implied that high unemployment rate in Eurozone was often perceived as not only the result of generous unemployment benefit and high minimum wages, but also high hiring and firing cost. Long time joining integration influenced ASEAN after controlled by MC and demographic variables, but it had not role in explaining Eurozone's unemployment rate. The result in the Eurozone was consistent with the finding of [17]. Asian crisis in 1998 was not so severe unemployment condition in ASEAN, but Eurozone crisis was painful for the employment in the Eurozone. For input variables, in line with theoretical argument, investment was an important factor in creating job opportunity and lowering unemployment rate [17] as the regression result showed the significant result in both regions. Individually for the Eurozone, crisis, investment, government expenditure, density, inflation, and government deficit were determinant variables in explaining

the change of unemployment growth. In ASEAN, among all variables membership, investment, dependency ratio, density, urban, exchange rate, and public debt had significant role in influencing unemployment.

VI. CONCLUSION

This study addresses the issue on recent reluctant condition of regional integration which has often received little attention in previous study.It was concluded that ASEAN performed better than the Eurozone in productivity and unemployment. Employing Solow model with panel data analysis, group variables played important role in both regions. The result implied that productivity convergence in the Eurozone and ASEAN was existed both unconditionally and conditionally. When the equation controlled by other variables the magnitude was higher in all estimation.

Joining Eurozone had no impact on productivity since it was not significant in all equations, but the condition was different for ASEAN since it had significantly positive role in increasing productivity growth and reducing unemployment growth. The gradual transformation of deeper regional integration in ASEAN based on this case was better than rapid integration process in Eurozone. The economic crisis was painful for productivity in both areas; however it had no role for unemployment in ASEAN with the explanation that the Asian economic crisis mainly hit financial sector while main sector in ASEAN was agriculture.

Withininput variables, openness and population growth were matter for productivity in Eurozone as so investment and government expenditure on unemployment. Demographic variables were really matter for productivity in the Eurozone; however, among variables included only density had impact on unemployment. For MC variables, Eurozone's policy to keep inflation low was relevant since the variable had power to reduce productivity and had impact on increasing unemployment. For ASEAN, investment was a very important factor inducing productivity and reducing unemployment. For ASEAN, density had negative impact on productivity and also increased unemployment as so living in urban. In ASEAN case, public debt should keep lower for its negative impact on productivity and the increase of unemployment. MC as policies variables in both areas appear to play a major role in shaping productivity and unemployment patterns, demographic condition also matter although in unemployment equation the individual effect not so determinant. The result of demographic change in both regions supported the "population neutralist" view that population growth in short run was not give benefit, but this growth will push the economic performance in long run.Better performance and higher speed of convergence in ASEAN could be explained as ASEAN showing amazing growth in productivity and relatively lower unemployment rate. The open market strategy was a key since the area was emerging market and investment targeted with more than 600 million inhabitants; moreover, capital labor ratio was still lower compared with Eurozone.

Concerning the significance of MC in determining real convergence indicated that the criteria were necessary although not sufficient to push countries for achieving convergence. Since the political union was hard to be achieved; moreover, the Eurozone had asymmetrical monetary and fiscal policies structure, MC latter SGP was still needed. Marelli and Signorelli [1]stressedthat satisfying MC in the Eurozone needed sacrifice in short term due to slow growth as the result delivering monetary policy to ECB and tightening fiscal policy, but in the long run countries will get the benefit from the advantage of macroeconomic stability such as price stability, fiscal discipline, removal exchange rate risks, reduction uncertainty of inflation and interest rate, and the spur of investment and international trade.To ensure the better Euro, a decade after introduction of the Euro some criteria need to be accomplished in parallel with enhancing surveillance and economic policy coordination. The lesson learned from Eurozone as ex-ante and ex-post process would be beneficial in line with ASEAN intentionto fully implement ASEAN Economic Community (AEC) by 2015; however, future comparative research is still needed to capture clearer lesson.

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