CAN FEMALE LABOR FORCE PARTICIPATION, FERTILITY RATE AND UNEMPLOYMENT AFFECT PER CAPITA INCOME? AN EMPIRICAL STUDY OF ASEAN COUNTRIES

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ABSTRACT:
Female labor force participation, fertility rate and unemployment are very sensitive and crucial aspects that may have major impact on the per capita income of country. The current study is designed to achieve the same purpose. In this study, for research purpose, the data has been collected from ASEAN countries as the study is based on ASEAN countries. This data consists of 27 years. When several tests such as LLC unit root, Kao cointegration, DOLS estimation and Granger casualty test were applied on the data, all the detailed results related to the order of integration, cointegration, variables' coefficient estimation and casual relationships were obtained. These results were then analyzed and criticized effectively. These results enlightened that FLFP and unemployment have significant impacts on per capita income in ASEAN countries. In the same fashion, the impact of the only control variable, literacy rate was also identified as significant. This study has various theoretical, practical and policy making implications which can be adopted in order to increase per capita income of the country. In the last, various limitations and recommendations for their improvement have been discussed. Future researchers can use these recommendations to broaden their researches and increase the accuracy and strength of the results of their studies.

Keywords:
Female Labor Force Participation, Fertility Rate, Unemployment, Per Capita Income, ASEAN Countries
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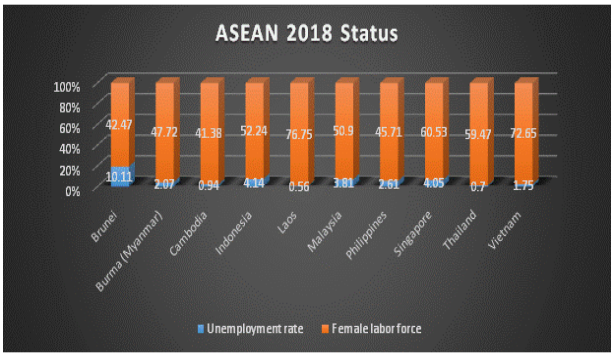
INTRODUCTION

Development of the country can be measured and determined by the per capita income of that country. Per capita income actually refers to the amount of money that is earned by one person in a particular country or geographical region. In the papers of Redding and Venables(2004) and Schott (2003) it is indicated hypothetically that nations more far off from worldwide financial movement will have lower levels of per capita pay and human capital, individually. The exact tests displayed in these investigations are good to the hypothetical relationship in the two cases. Financial development is prodded by gathering of physical and human capital and through advances in innovation (complete factor profitability). Numerous variables can advance or frustrate these procedures. Experience demonstrates that nations that have developed quickly have been effective in making conditions that are helpful for since quite a while ago run for every capita income growth. Most nations in South-East Asia, have experienced significant monetary development, with the pace of development having differed generously crosswise over nations(Abraham, Ohemeng, & Ohemeng, 2017; Brinton & Lee, 2016). Over the most recent three decades, there has been a quick ascent in the economies of East Asian and South East Asian countries. The twenty-three economies of East Asia developed at a quicker normal rate than every single other district over the 1965-90-time frame as announced by the World Bank (1993). ASEAN countries show significant economy and development in last decades according to GDP.

The connection between female labor force participation (FLFP) and economic improvement is somehow unclear than regularly depicted in

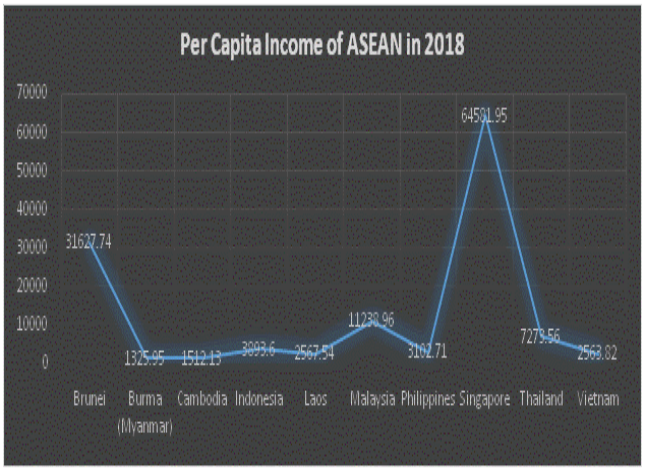
both the scholastic writing and arrangement discussions. Past studies have evidently described that a U shape is formed whenever the relationship between FLFP and economic development is considered. These studies have also discussed the need of improving conditions related to policy making so that the FLFP may be increased in a particular country. It has been found out that female total fertility rate is generally a basic problem for both developed and developing countries. FL and FLFP in Indonesia was 2.3 and 51 percent, respectively during the years of 1995 and 2013. In the same way, Malaysia has FL and FLFP of 2.8 and 43, respectively. The FL and FLFP of Philippines was 3.5 and 49 respectively, for Singapore it is 1.3 and 3 percent,for Thailand it is 1.6 and 66 percent and Vietnam has 1.9 and 69 percent of FL and FLFP respectively during the year of 1995 to 2013. As Thailand is one of the most trading nations in Asia, government would attempt to grow the economy and prosperity of individuals by thinking about export to be an extensive factor. Just as in Thailand, the economy has bounced back to 12 % development in gross domestic product of the first quarter (Q1) in 2010, which quickened from 5.9% of the past quarter; quicker than anticipated (3.5 – 4.5%) because of the household utilization and speculation just as the improvement in fares. In any case, in the subsequent quarter (Q2) of 2010, the economy backed off from Q1 mostly because of certain dangers, for example, the EU budget crises, which altogether influences the recuperation in worldwide economy and furthermore our political distress in Bangkok, which may influence the traveler industry private utilization, speculations and furthermore the financial specialist's confidences.

Following graph 1 is showing the 2018 status of unemployment as well female labor force participation.



Graph 1: ASEAN 2018 Status.

As shown in the graph highest unemployment rate is in Brunei and lowest in Laos. In the same way, FLFP is highest in Laos and lowest in Cambodia. Another graph given belowis showing the precipitate income of all ten ASEAN countries.



Graph 2: Per Capita Income of ASEAN in 2018

According to the graph Singapore has highest income and Burma has lowest. The past monetary and money related emergency in 2008 has been generally influenced on the ten-part nations of the relationship of Southeast Asian Countries (ASEAN), nonetheless, the locale is bouncing back superior to anything numerous have anticipated. As indicated by year-on-year quarterly gross domestic product development, it becomes evident that economic development in numerous nations in that area is at present in pre-crisis level with 5.4% developed Gross domestic product in 2010, contrast with 1.4% development in 2009. In ASEAN countries per capita income level is diminishing and left behind from developed countries due to which modernity and prosperity of people are not improving. To know the causes of lowest per capita income at ASEAN

countries there is need to address the FLFP, FL and unemployment rate. These are the independent variables and per capita income is the dependent variable. To enhance the growth of ASEAN countries there is need to enhance the participation of female at work level and need to enhance the employment rate. Female participation, unemployment and fertility rate arethe causes of lowest economic growth not only in ASEAN countries but many other countries also have these economic uncertainties(Chapman, 2015; Dutta & Mallick, 2018).

The intention of the current study is to develop a proper understanding about the casual and dependent relations between the above-mentioned variables in ASEAN countries. Independent variables are the FL, FLFP and unemployment whereas the dependent is per capita income. Although there are many researches that have been conducted on this topic but there is research gap at ASEAN countries literature. Rarely, we can see the work on FL, FLP and unemployment in relation with income. In essence,Hartani et al (2015) recommend studying the relationship between FL and FLFP at ASEAN countries.

Following are the research objectives of the study.

- To analyze the impact female labor force participation on per capita income of ASEAN countries.
- To determine the impact of female fertility rate on per capita income of ASEAN countries.
- To identify the role of unemployment on the per capita income of ASEAN countries.

The scope of the study is to see the impact and its significance level between labor force participation and per capita income, fertility rate and per capita income, and unemployment and per capita income. As discussed above, there is research gap on these topics at ASEAN countries. This study will lead policy makers and researchers to find out the reasons of lower economic growth through previously discussed variables(Evan & Vozárová, 2018; Karaalp-Orhan, 2017). The theoretical framework with relationship of independent and dependent variables to formulate research hypothesis has been discussed by the author in the following section.

LITERATURE REVIEW

Milton Friedman demonstrates theory of the natural rate of unemployment and output. Kanapathy and Baharom(2013) illustrate this theory in his study that parity of yield and unemployment levels are dictated by genuine elements of production, innovation and institutions. Furthermore, in the long run, yield and unemployment are not influenced by the Aggregate demand (AD). For instance, when the money related approach grew the cash supply in the market, it will result in enhancing demand aggregate (AD) and in this manner causing the firm to build the yield(Karshenas, Moghadam, & Chamlou, 2016; Klasen, 2019). As a result, a business or work expands. This expansion in work will lessen the unemployment rate. In any case, this progression is just for the present moment because in the long run, business and unemployment will be back to the equalization of the common rate. Normal unemployment rate is the work request equivalent to work supply in certain genuine pay levels. As indicated by this theory, a person won't be able to build outcome more than the regular degree of outcome and unemployment can't be decreased beneath the characteristic pace of unemployment.

1.1 Female labor force participation and per capita income

OECD produces a report on “Strengthening Women’s Entrepreneurship in ASEAN countriestowards increasing women’s participation in economic activity” which illustrates that the economic development accomplished by the Southeast Asia locale in the course of recent decades has been joined by extensive gains in females’ entrance to labor markets. In 2015, the normal female work power interest rate in Southeast Asian nations was near 67%, surpassing the OECD normal by more than 7 rate focuses(Afridi, Dinkelman, & Mahajan,

2018; Ahmad & Khan, 2019). The locale's male/female compensation has relentlessly diminished somewhere in the range of 2010 and 2015, although it remains essentially higher than the OECD normal(Kumari, 2018; Magda, Kiełczewska, & Brandt, 2018). Most of ASEAN governments have clung to worldwide instruments or apply components of global proposals to handle sexual orientation segregation, striking the OECD Gender Recommendations and the CEDAW. They have additionally attempted to actualize national sex mainstreaming methodologies to address sexual orientation holes in access to government projects and administrations(Hussain, Musa, & Omran, 2018).

Clark, K. B., & Summers, L. H. (1982) demonstrate that the labor force participation estimates the extent of a nation's working-age populace that connects effectively in the labor market, either by working or searching for work; it can demonstrate the size of the stockpile of work accessible to take part in the generation of merchandise and enterprises, comparative with the populace at working age (ILO, 2016). Tsani, S et al. (2012) considered the connection between female work power investment and monetary development in southern Mediterranean nations(Magda et al., 2018; Majbouri, 2016; Marone, 2016). It has done so utilizing a two-advance procedure: an econometric exercise and general harmony demonstrating. The econometric outcomes affirmed the view that there is a U-shape connection between monetary development and the female work power interest rate. The outcomes further proposed that women's' choices to partake in the work power may be influenced by other individuals, monetary and economic situations(Anyanwu, 2016; Besamusca, Tijdens, Keune, & Steinmetz, 2015). On account of the southern Mediterranean nations, the estimation results proposed that female work power interest may diminish if financial development in the area is humble and may increment on the off chance that it is adequately high. Subjective qualities explicit towards the southern Mediterranean nations may clarify the low degrees of female cooperation in the locale.

ILO (2018) states that abatement in the labor force participation of the world's working-age populace has been driven chiefly by a consistent decrease in labor power support in Asia and the Pacific. While in every single other district the provincial work power investment rate rose humbly in the mid-2000s, in Asia and the Pacific the general interest rate declined all through the verifiable period(Garganta, Gasparini, & Marchionni, 2017; Hunter & Daly, 2018). Asia and the Pacific's provincial work power investment rate is anticipated to fall underneath the worldwide normal throughout the following quite a while. Africa is the main locale where the work power support rate is anticipated to increase in the coming decades, which is relied upon to mellow the worldwide decrease in cooperation. Lim (2004) demonstrates that women have expanded a lot of the work power; the expanding investment of women in paid work has been driving business patterns while the sexual orientation holes in labor power cooperation rates have been contracting(Mehmood, Ahmad, & Imran, 2015; Miller, Saad, & Martinez, 2016). Particularly during the 1980s and mid-1990s, work power development was considerably higher for ladies than for men for each district of the world aside from Africa. In the created industrialized nations, expanding female work power support has been connected to the fruition of the richness change. In many creating nations, fruitfulness decrease has been moderate or slowed down.After reviewing literature following hypothesis has been proposed:

H1: Labor force participant has significant impact on per capita income.

1.2 Fertility rate and per capita income

Lim (2004) defined that the fundamental thought is that populace development adjusts financial development in a roundabout way through the channel of the two different factors which are the main thrusts of pay per-capita development populace and salary per-capita development can either be emphatically or adversely related. It

ought to be noticed that the model doesn't suggest that populace development is basic for financial development. For whatever length of time that people put resources into human capital, supported per-capita long haul development is conceivable, even with a steady populace. For this situation, the development pace of per-capita utilization is driven by human capital amassing(Majbouri, 2019; Schellekens & Gliksberg, 2018; Thurlow, 2015; Nawaz, Afzal, & Shehzadi, 2013). The outcomes, then again, propose that populace development can either quicken or hinder the procedure of financial improvement. Concerning the effect of ripeness on welfare, it ought to be noticed that people don't represent the wide advantages of their interests in youngsters and human capital. Apart from this, the model suggests that the balance can lead either to an over the top or an inadequate degree of development over the long haul contrasted with the ideal. The result relies upon which of the scale impact or quality-amount exchange off overwhelms(Mirzaie, 2016; Serrano, Gasparini, Marchionni, & Glüzmann, 2019).

Amalia, Siti and Yudaruddin, Rizky(2018) state that ASEAN populace has nearly multiplied in the course of the most recent four decades – arriving at 642.1 million by 2017. Populace increment in ASEAN region was basically because of common increments and participation extensions during 1984-1999. Various changes in populace age structures show that ASEAN is encountering statistic progress as reflected in declining richness and mortality levels during the most recent couple of decades. This statistic change prompts increments in the portions of youth and working-age populace at various phases of advances among ASEAN Member States (AMS). Calmforsand Holmlund(2000) states that development expects fruitfulness and a rising pace of profit for human capital while the supply of human capital increases. At the point when human capital is bounteous, paces of profit for human capital ventures are high comparative with paces of profit for kids, while when human capital is rare, paces of profit for human capital are low comparative with those on kids. Therefore, social orders with constrained human capital pick enormous families and put little in every part. On the other hand, those with plenteous human capital do the inverse.

H2:Fertility rate has significant impact on per capita income

1.3 Unemployment effect on per capita Income

Tournemaine(2007) illustrates that a significant element is that women' employments and salary procuring limit will in general be progressively unreliable. Women, by and large, have higher paces of joblessness and particularly under-business and camouflaged joblessness than men and they think that it’s harder to return to work once they lose their positions. For instance, toward the finish of the 1990s, the open joblessness rates for ladies and men individually were 5.1 percent and 3.3 percent in Indonesia, 9.7 percent and 6.0 percent in the Bahamas, 14.3 percent and 11.9 percent in Argentina, 11.6 percent and 7.2 percent in Brazil, 23.3 percent and 17.2 percent in Colombia, and 14.5 percent and 8.8 percent in Nicaragua respectively. Somewhere in the range of 1990 and 1997, the joblessness rate for ladies expanded by 2 and 5 percent in Northern Africa, Central and South America and Eastern and Western Europe. Young ladies specifically have exceptionally high paces of open joblessness. For instance, in Philippines in 1998, the rate was 19.3 percent for ladies matured 15-24 years when contrasted with 13.6 percent for men in a similar age and 5.3 percent for ladies matured 25-54 years(Tasseven, 2017; Taşseven, Altaş, & Turgut, 2016). Researchers have discussed that one purpose behind ladies to have kids is to guarantee their security either in mature age or under troublesome monetary conditions, at that point it could be theorized that this thought process would be progressively significant under states of developing joblessness and pay frailty.

ASEAN Key Figures (2018) demonstrate that unemployment has a huge beneficial outcome on female work power cooperation. This implies that the expansion in unemployment will build female

work power cooperation in the ASEAN locale. This demonstrates that ladies still depend on pay got from their spouses or guardians (men) with the goal that when there is monetary weight, women are compelled to work. There is a connection between financial improvement and female work power investment following the example of U in the district ASEAN during the period of 1993-2012. Subsequently, it is important to detail explicit approaches to defeat non-monetary requirements, for example, culture that can lessen the degree of ladies' investment in the realm of work. Tamura, R. (1990)has the view point that the connection between since quite a while ago run development and unemployment is considerably more confusing and has not been inquired about without question. Exogenous changes of the pace of development can influence joblessness(Tsani, Paroussos, Fragiadakis, Charalambidis, & Capros, 2015; Verick, 2018; Vicens-Feliberty & Reyes, 2015). Exogenous changes of the sort of development can influence joblessness. Changes in labor-advertise establishments can influence the development rate in a specific way by means of changes in joblessness. Changes in labor-advertise foundations can influence both joblessness and development legitimately through various instruments.

H3: Unemployment has a significant impact on per capita income.

METHODOLOGY

1.4 Data

Data that has been collected for this particular study covers the period of 27 years. The data for all these years has been collected from some specific countries that come under the ASEAN region. Due to the huge importance and sensitivity of the data collection procedure, it has been effectively collected from the most accurate sources that are usually believed to be supposed to give exact and more accurate results. The database in our case is World Development Bank Indicator of World Bank and Global Economy. The collected data is specific for some variables about which the author is concerned. These particular variables consist of three categories i.e. independent, dependent and control. It has been crystal clear that the variables included in independent variables are female labor force participation, fertility rate and unemployment. Other than these variables, there is a dependent variable i.e. per capita income and a control variable too i.e. literacy rate. It has been made sure that the collected data must be related to these specific variables.

1.4.1 Model Specification

After collecting enough data, the author is supposed to construct a regression equation specifically for the variables that are related to the study. For this purpose, it has to be made clear that the author is to estimate the impact of independent variables i.e. female labor participation, fertility rate and unemployment on the dependent variable, per capita income. The thing important to be noted here is that the control variable, literacy rate may affect the above mentioned impact, therefore it is also included in the research process by the author. All the above mentioned variables have specific measurement units designated for them as shown in the table below:

Variables	*Representations*	*Measured by*
Per Capita Income	PCI	US dollars
Female Labor Force Participation	FLFP	percentage of the total labor
Fertility Rate	FER	births per woman
Unemployment	UNE	percentage of the total labor
Literacy Rate	LIT	percentage of educated people

Table 1: *Measurement Units of Variables*

After specifying these measurement units to each variable, the author has generated a regression equation that can be expressed in the following way:

$$PCI_{it} = \alpha + \beta_1 FLFP_{it} + \beta_2 FER_{it} + \beta_3 UNE_{it} + \beta_4 LIT_{it} + \varepsilon_{it}$$

Here, PCI is used for per capita income, FLFP is used for female labor force participation, FER is used for fertility rate, UNE is used for unemployment, LIT is used for literacy rate and finally ε_{it} is the term that is used to represent any error.

Author	Period	Country/Groups	Variables	Methodology	Results
Ozturk, Aslan, & Kalyoncu (2010)	1971-2005	51 countries	Energy consumption, economic growth	Pedroni cointegration test, panel casualty test	Long run casualty from energy consumption to growth and unidirectional casualty between them, no strong cointegration between the variables
Carrasco (2001)	1986-1989	5000 households	Fertility rate, female labor force participation	IPS and LLC unit root, Pedroni cointegration, FMOLS estimation	Long run equilibrium relationship between variables
Croda, Kyriazidou, & Polycarpou (2011)	1990-2007	451 women	Labor force participation of married women, transitory and permanent non-income	Pedroni and Kao cointegration, Granger casualty test	Strong effect of labor force participation, very less effect of transitory and permanent non income
Mishra & Smyth (2010)	1980-2005	28 OCED countries	Female labor force participation, fertility rate	Panel unit root, panel cointegration, Granger casualty test	Inverse relation between FLFP and fertility rate
Lechman & Kaur (2015)	1990-2012	162 countries	Economic growth, FLFP,	Basic panel data analysis	U shaped relationship between economic growth and FLFP

Table 2: *Evidence from Past Studies*

1.5 Estimation Procedure

This section of the study covers the whole range of various tests and techniques that can be effectively utilized in this particular study. It is a well known fact that different study types and data types require different types of techniques to be used for the estimation and analysis of collected data. So, according to the type of this study, the author has used LLC unit root test, Kao cointegration test, DOLS coefficient estimation test and Granger casualty test. For the purpose of

completely understanding these types of techniques, their properties and benefits as well as their relative equations, this section of the study can be concerned.

1.5.1 Panel Unit Root Test

Penal unit root tests are the major tests in the initial levels of any research that can be used for multiple purposes. The most important purpose to use these tests is that they can identify the order of integration of the variables (Levin, Lin, & Chu, 2002). Not only this, but these tests also provide the schoastic properties of the variables which indicate that whether the data is stationary or not. To achieve these objectives or purposes, two most important tests that are employed in this regard are LLC and IPS, representing Levin Lin Chu and ImPesaran Shin tests. These tests are originally derived from ADF time series tests. A very important concept must be kept in mind that these above mentioned tests are preferred over the old tests due to various reasons. These reasons include the greater power and size issues overcoming ability and the availability of standard normal distribution of the collected data (Levin & Lin, 1993). In addition it must be noted that the variations of data are very effective in the accurate and exact implementation of unit root tests. Null and alternate hypotheses are very significant in these unit roll tests. Null hypothesis can be characterized by the presence of unit root and non stationary data. On the contrary, alternate hypothesis can be characterized by the absence of unit root and the stationary data. The results of these tests can be explained on the basis of these two kinds of hypotheses. Based on the type of research, the author has used LLC unit root approach and its general equation is given below:

$$\Delta y_{i,t} = a_i + \rho y_{i,t} - 1 + \sum_{J=1}^{pi} a_J \Delta y_{i,t-J} + \varepsilon_{i,t}$$

In this equation, $\Delta y_{i,t}$denotes the difference point of $y_{i,t}$in context of ith country and the time period t.

1.5.2 Panel Cointegration Test

After the successful identification of integration among variables, the author will now be investigating any cointegrating relationship between the variables. For this purpose, Kao and Pedroni techniques or approaches can be employed to check any cointegration between the variables. These two tests are actually the two kinds or types of cointegration tests. The long term relationship between variables can be identified after the acceptance of unit root null hypothesis (Bangaké & Eggoh, 2010). This process involves two distinct techniques i.e. "within dimension" and "between dimension" which can be differentiated on the basis of types of statistics. This fact can be explained in such a way that within dimension approach provides the results about four homogeneous panel cointegration statistics. These statistics include "panel v statistic, panel rho statistic, panel PP statistic (non parametric) and panel ADF statistic (parametric)". On the other hand, between dimension technique provides the results for three heterogeneous group cointegration statistics, which include "group rho statistic, group PP statistic (non-parametric) and group ADF statistic (parametric)". All these types of statistics have their specific values as a result of the cointegration test applied on the collected data. These results are based on null and alternate hypotheses showing no cointegration and cointegration respectively. The author has used the Kao cointegration test that is a parametric and residual based for null hypothesis and can be presented by the following equation:

$$y_{i,t} = \alpha_i + \delta_{i,t} + \beta_1 X_{1,i,t} + \beta_2 X_{2,i,t} + \cdots + \beta_n X_{n,i,t} + \varepsilon_{i,t}$$

1.5.3 Coefficient Estimation Test

When the integration has been confirmed by using unit root tests and cointegration has been confirmed by using cointegration tests, the next thing in the research process is to confirm any long term relationship between the variables. For this purpose, simple OLS tests were used in the past but due to the occurrence of several problems

due to OLS, FMOLS and DOLS tests were introduced (Pedroni, 2001). The problems due to OLS included that there was serial correlation and endogenous variables, which can be effectively solved and overcome through the use of FMOLS and DOLS. In this study, DOLS technique of coefficient estimation has been used by the author. When DOLS is run for the collected data, all the variables get some values of coefficients that are very useful in the investigation and identification of long term relationships between variables. The general equation for DOLS test used in this study is given as:

$$\hat{\beta}_{FM=}\left(\sum_{i=1}^{N}\sum_{t=1}^{T}(x_{i,t} - \bar{x}_i)^2\right)^{-1}\sum_{i=1}^{N}\left(\sum_{t=1}^{T}(x_{i,t} - \bar{x}_i)\widehat{PCI}_{i,t} - T\hat{\delta}_{\varepsilon u}\right)$$

In this equation, $\widehat{PCI}_{i,t}$ is the transformed variable of per capita income due to endogeneity correction while $\hat{\delta}_{\varepsilon u}$ represents the serial correlation correction by FMOLS.

1.5.4 Granger Casualty Test

When the cointegration between variables has been confirmed, it gives the indication of some possibility that there might be some casual relationship between variables. For this purpose, Dumitrescu and Hurlin Granger casualty test is used to identify the existence as well as direction of the casual relationships (Dumitrescu & Hurlin, 2012). These tests are performed for all cross sections and as a result, test statistics are obtained. Just like unit root and cointegration tests, casualty tests also involve null and alternate hypothesis. Null hypothesis means that there is no casual relationship between variables while alternate hypothesis means that casual relationships exist between variables. The general equation for these casualty tests is given as follows:

$$x_t = \sum_{i=1}^{\infty} a_i\, x(t-i) + c_1 + \mu_{1(t)}$$

$$x_t = \sum_{i=1}^{\infty} a_i\, x(t-i) + \sum_{j=1}^{\infty} b_j\, y(t-j) + c_2 + \mu_{2(t)}$$

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1.6 Results of Panel Unit Root Test

As it has been clear from the previous discussion that the integration among the variables is a must step before entering into cointegration phase, the researcher, in this particular study has applied LLC unit root test for the purpose of identifying unit root and integration of order one among the variables. As a result of application of this test, the results have been given by the author in table 2. It can be seen in the table that not only level series but first difference series has also been investigated. Furthermore, in both these series, the values obtained belong to both without trend as well as with trend factors. It is quite evident from the table that almost all values from the level series of the table support the acceptance of null hypothesis indicating the fact that there is possible existence of unit root and also that the data is non stationary. When the same situation was first differenced, the situation was reversed. In other words, most of the values in first difference section of the table supported the rejection of null hypothesis by one, five and ten percent significance levels randomly for different values. This result in the first difference series depicts the absence of unit root as well as the fact that data is stationary. The above mentioned results also argued that all the variables of the current study are integrated of order one and are ready to be tested for cointegration. To conclude this test, a statement can be made in such a way that data is non stationary in level series while it is stationary in first difference series.

Table 3: *LLC unit root test*

Constructs		FLFP	FER	UNE	PCI	LIT
Level	**No Trend**	-2.436	-2.363	-3.308	-4.273*	-3.283*
	Trend	-4.373	-4.890*	-6.386	-2.471	-4.663*
1st Difference	**No Trend**	-2.6287	-4.30799***	-3.71221**	-2.915	-4.361**
	Trend	-4.296***	-3.499***	-4.296***	-4.879*	-3.637***

In this table, * represents that the rejection is one percent significant, ** shows that rejection is five percent significant, *** shows that rejection is ten percent significant

1.7 Results of Panel Cointegration Test

When the integration of variables has been confirmed, the next step is to apply any cointegration test on the collected data in order to investigate the cointegrating relationship or long run relationship between the variables. In this current study, the researcher has employed Kao cointegration test for achieving the same purpose. All the results of the above mentioned test have been presented in the table 3. During the analysis of this table, it can be evidently seen that different values for various test statistics specific for two distinct approaches i.e. within and between dimension are present, giving different consequences. As four statistics are involved in within dimension approach, three of them have rejected the null hypothesis with significance of one and ten percent. This null hypothesis originally indicates that there is no cointegration among variables but due to its rejection in this case, the situation is reversed and existence of cointegration has been confirmed. On the contrary, when the same test was applied for between dimension approach containing total of three statistics, two out of them, with the significant level of five and one respectively, have rejected the null hypothesis. Again in this scenario, the existence of cointegration is supported by the results. The results in this case can be supported by the fact that PP and ADF statistics are more crucial while determining the cointegration between variables. When the overall situation is summarized, it can be said that as five out of the total seven statistics have rejected the null hypothesis, so the cointegration presence has been confirmed through this test.

Alternative hypothesis: common AR coefs. (within-dimension)				
	Statistic	**Prob.**	**Weighted Statistic**	**Prob.**
Panel v-Statistic	-1.7967*	0.0262	20.336387	0.0193
Panel rho-Statistic	4.0734*	0.0068	4.634982	0.0458
Panel PP-Statistic	-4.7224***	0.0001	-2.120508	0.0000
Panel ADF-Statistic	0.192145	0.5762	-0.474465	0.3176
Alternative hypothesis: individual AR coefs. (between-dimension)				
	Statistic	**Prob.**		
Group rho-Statistic	6.048844	0.0000		
Group PP-Statistic	-7.589317**	0.0000		
Group ADF-Statistic	-0.388626*	0.7464		
Kao test.	**Statistic**	**Prob.**		
ADF	-2.59857*	0.0317		

Table 4: *Kao cointegration Test*

In this table, * represents that the rejection is one percent significant, ** shows that rejection is five percent significant, *** shows that rejection is ten percent significant

1.8 Results of Coefficient Estimation Test

When the integrated and cointegrated relationships among the variables have been confirmed, the next thing in the list is to measure or estimate coefficients of these above mentioned relationships effectively. To meet this objective, the author of this study has adopted the method of DOLS, the results and different values related to which have been given in the table 4. When the values of the first variable, FLFP were considered, it came out that its impact is significant on per capita income with the given value of 31.8%. In other words, the increase of one unit of FLFP gives an increase of 31.8% in the per capita

income. The same results are consistent in case of unemployment i.e. it has significant impact on per capita income. This can be explained in such a way that one unit increase in unemployment will decrease 18.3% of per capita income. The last independent variable denies this result in its regard and it shows no significant impact on the dependent variable. As only one control variable was used in this current study i.e. literacy rate, its impact has also been confirmed as significant with per capita income with the value of 29.1%. To summarize the above mentioned results, it can be said that two out of three basic independent variables are significant along with the control variable, literacy rate, while one remaining independent variable is insignificant.

Estimator	Coefficient	SE	P-value
FLFP	0.318*	0.837	0.007
FER	0.121	0.378	0.058
UNE	0.183**	0.972	0.037
LIT	0.291*	0.398	0.002
Adj. R Square	**0.702**	**0.927**	**0.000**
D.W. Stat	**2.180**	-	-
Long Run Variance	**0.003**		

Table 5: *DOLS Estimation*

In this table, * represents one percent significance level, ** shows five percent significance level

1.9 Results of Granger Casualty Test

As the main motive to use Granger casualty test is to find out any casual relationship among variables, the researcher has received the following values as results of casualty test. These results are given in the table 5. In this table, casual relationships are found to exist among the following pairs of variables: FER and FLFP, UNE and FLFP, UNE and FER, LIT and FER, PCI and FLFP, and PCI and UNE. Therefore these results clear that some variables are casually related with each other.

Variables	FLFP	FER	UNE	LIT	PCI
FLFP	0.636				
FER	0.462**	0.737			
UNE	0.381*	0.687**	0.572		
LIT	0.576	0.482*	0.376	0.601	
PCI	0.363*	0.652	0.478*	0.347	0.571

Table 6: *Granger Causality Test*

In this table, * represents one percent significance level, ** shows five percent significance level

DISCUSSION AND CONCLUSIONS

1.10 Discussion

The basic motive to conduct this study was to determine the impact of female labor force participation, fertility rate and unemployment on income per capita of the country. This study also involves a control variable that is literacy rate. The first hypothesis that was generated in the literature review section was that FLFP has significant impact on per capita income of a country. the results of different tests and

techniques have accepted this hypothesis and this acceptance has also been shown by a past study (Tam, 2011). The next hypothesis in this regard was that fertility rate has significant impact on per capita income. This hypothesis was not accepted due to the negative results of the tests, as also represented by the past researchers (Alkema et al., 2011). The last hypothesis that unemployment has significant impact on per capita income has also been accepted just as the first hypothesis. This result is also consistent with the past study of a researcher. In addition, the impact of only control variable, literacy rate has been accepted according to the results of the tests performed for the collected data. This result can be witnessed in a past study (Layard, Nickell, & Jackman, 1994).

1.11 Conclusion

FLFP, fertility and unemployment are very important as well as sensitive topics that have been included in this study. The basic motive of the author is to study and investigate the impact of the above mentioned variables on per capita income. For achieving this objective, data was collected from ASEAN countries that consisted of 27 years and its sources were very reliable. This collected data was then passed through a series of steps involving different test and techniques and results were obtained by them. These results indicate that FLFP and unemployment have significant impact on per capita income but the impact of fertility rate has been investigated as insignificant. In the same fashion, the impact of the only control variable, literacy rate has also been considered as significant. There are many limitations in this study and several theoretical, practical and policy making benefits too.

1.12 Implications

Several theoretical, practical and policy making benefits of this study are explained here. First of all, this study has provided the literature in a larger context about very important concepts that are included in the topic of this study. These important concepts include female labor force participation, fertility rate, unemployment and their influence on per capita income of the country. Other researchers may use this literature in their studies effectively. Other than that, this study has also has provided assistance to the government officials and other relative people to increase female labor participation in industries and other sectors, control the fertility rate and overcome the problem of unemployment so that per capita income of a country may enhance. Not only that, but this has also helped the government to make policies that purely support female labor participation in industries, creating balance in fertility rate and resolving the huge issue of unemployment so that the per capita income of a country may flourish and increase economic growth.

1.13 Limitations and Future Recommendations

This section is supposed to cover some of the limitations and future recommendations related to them for the other researches. The first point in this context is that this study is limited to some specific panel study tests, but other researchers may employ some other techniques and approaches for the same purpose. It may also be noted that the sample size of the collected data was small, limiting the scope of the research. Another important point to be discussed here is the limitation of the selected region or countries, which can be resolved by the other researchers if they choose other countries and regions as well. The last point is that the other researchers must also find out some other variables or concepts for which they can conduct studies effectively.

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