Feminization U Curve: Structural Transformation Impact on Female Labour Force Participation in Asia

Hasibuana Laras Kinanti[1*], Evi Noor Afifah[1†]

[1]Department of Economics, Faculty of Economics and Business, Gadjah Mada University

Abstract

This research aims to observe the relationship between female labour force participation with economic development and to test Feminization U Curve (FEMU) hypothesis in Asian countries for the period 1990-2018. FEMU model is estimated with static model Fixed Effect as conducted in the initial research and elaborated with dynamic panel model Generalized Method of Moments (GMM). Overall, the static and dynamic model confirmed the U curve relationship between female labour force participation and economic development in accordance with FEMU hypothesis, thus female labour force participation decreases when the economy undergoes structural transformation from agricultural to industrial, and it will rise as the economy goes service sector. The hypothesis is also confirmed in the country-income categorized model. The U curve is more consistent in static model compared to the dynamic one. In addition to the structural changes that has been occurring, the dynamics of female labour force participation in Asia also can be explained with the decline in fertility rate and improvement of female tertiary education.

Keywords: Feminization U Curve, female labour force participation, economic development, GMM dynamic model

JEL Classification: J01, J16, J21, L16, O11

[*] Department of Economics, Faculty of Economics and Business, Gadjah Mada University, Jl. Humaniora No. 1, Bulaksumur, Yogyakarta, 55281, Indonesia
Email: laraskinanti.h@gmail.com

[†] Department of Economics, Faculty of Economics and Business, Gadjah Mada University, Jl. Humaniora No. 1, Bulaksumur, Yogyakarta, 55281, Indonesia
Email: evinoor.afifah@ugm.ac.id

Feminization U Curve: Structural Transformation Impact on Female Labour Force Participation in Asia

Hasibuana Laras Kinanti, Evi Noor Afifah

I. Introduction

1.1 Background

The world population consists of the same percentage of the female and male population, but only 50% of female in their productive age who participate in the labour market (UN Women 2019). This number indicates that half of our human capital is not optimally harnessed, and a misallocation of human capital can hinder the achievement of optimal productivity (ADB, 2016; Kim & Salazar, 2018). For the female population, their participation in the workplace is important to allow them to have control of assets which correlates with their freedom to make a decision and mobilize (Swaminathan, Lahoti, & Suchitra, 2012). Moreover, improving female welfare can also increase the resilience of a household to vulnerabilities, since economic condition like poverty and crisis are not gender neutral and has more negative impact to women (Bastos et al., 2008; Miguel, 2005).

According to Goldin (1995), female labour force participation (FLP) alters along with economic development forming a U-shaped curve or called as Feminization U Curve (FEMU) hypothesis. FLP decreases as the economy undergoes a structural transformation from agricultural to industrial sector, and it will rise as the economy goes to the service sector. At the same time, the education level of the female population will increase, and the fertility rate will decrease. FEMU hypothesis indicates the significance of economic development dynamics to affect FLP and in a certain stage of the structural change, there is a trade-off between economic development and FLP. The structural transformation can be seen in Asian countries which during the last three decades, this region experiences 3.5% rises in their average FLP, but there is also a reduction of FLP in the agricultural and industrial sector. After the Asian Financial Crisis 1997-1998, the total FLP of Asian countries increase as one of the ways to recover from the crisis or as a coping mechanism, this indicates that the cycle of macroeconomic is not gender neutral (Lim, 2000).

According to Engel's Law, during the economy growth or the increase of GDP, there will be change in the demand composition of goods and service (Chenery, 1960). Following the change of the demand, the composition of labour demand for the modern sector also changes (Schultz, 1990). The economic growth causes structural change, where there is an increment of wages in the industry or service modern sector, and this will increase demand or employment for labour in the industry or service sector. Then as stated by Lewis Model, the result of the structural change process is an increase of output in the industry or the service sector (Todaro & Smith, 2015). This structural change then will cause some changes for the female labour force participation, as in the hypothesis of Feminization U Curve (Goldin, 1995). But different with the male worker, economic shift to the industry sector does not increase as much of the female worker, and even in some case, the transformation

can decrease the FLP in the industry sector. The female labour force participation is expected to increase when there is an opening of job in the service sector.

1.2 Research Purpose

This research aims to observe the relationship between female labour force participation with economic development and to test the Feminization U Curve hypothesis in Asian countries for the period 1990-2018. This research will also confirm the model with the country-income categorized model and test the robustness of the hypothesis in a static and dynamic model.

This paper will contribute to the development of Goldin's (1955) FEMU hypothesis by focusing on a smaller scope of the region with more similar characteristics, which is Asian instead of worldwide countries, so it will be able to provide research for policy decision making regarding female workforce inclusion to achieve Gender Equality and Women's Empowerment as one of crucial UN Sustainable Development Goal in the region. Furthermore, different from the original work, this research use panel data instead of cross-section, thus it will be more relevant to capture the changes occurring along the time. More importantly, this paper develops the FEMU hypothesis study by using the dynamic GMM econometrics method to solve other endogeneity issues which cannot be solved with FE and to capture the dynamic factor of economic structural transformation that occurred in Asia from 1990 until 2018. With a quadratic equation, the model also can be used to determine the turning point of the U-curve, before which FLP will decrease during the structural transformation, and will start to increase after passing the threshold.

II. Data and Methodology

This research observes Feminization U Curve (FEMU) with panel data of 51 Asian countries from 1990-2018, all data sourced from World Bank database. FEMU model is estimated with static model Fixed Effect (FE) as conducted by Mammen dan Paxson (2000) and further elaborated with dynamic panel model Difference and System Generalized Method of Moments (GMM) to capture dynamic or historical factor, in which FLP in the current period is affected by its realization in the previous period.

To test the hypothesis, this research refers to the econometrics model from the original FEMU work of Goldin (1995) as follows:

$$FLP_{\mathrm{i}} = \alpha + \beta_1 \, lnGDP_{\mathrm{it}} + \beta_2 \, (lnGDP_{\mathrm{it}})^2 + \varepsilon_{\mathrm{i}} \quad (1)$$

The initial model of FEMU hypothesis used cross-section data so it could not observe the changes of variable over time which happened in all countries. If the FEMU hypothesis is applied in the countries, $lnGDP_{\mathrm{it}}$ coefficient will be negative and $(lnGDP_{\mathrm{it}})^2$ coefficient will be positive, or $\beta_1<0$ dan $\beta_2>0$. The next work by Cagatay and Ozler (2015) conducted the research with panel data and OLS estimator, but the method carries a bias due to time-invariant unobserved heterogeneity. The model then developed with Fixed Effect (FE) estimation as done by Mammen and Paxson (2000):

$$FLP_{it} = \alpha_i + \beta_1 \, lnGDP_{it} + \beta_2 \, (lnGDP_{it})^2 + \rho X_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

The FE model can recover time-invariant factor which affect female labour force participation, but it still has several issues: FLP has a little variation, FLP from the previous year correlates with the error term, and the regressor is endogenous so that the FE estimation is not optimal for the model. Furthermore, although FE model can control the potential endogeneity issue caused by the correlation of independent variable with the time-invariant and country-specific unobserved heterogeneity, the model cannot solve endogeneity issue caused by the other sources (Gaddis and Klasen, 2014; Verme, 2015).

To solve static model issues, this research can use panel data dynamic model GMM (Generalized Method of Moments) as done by Verme (2015). Based on Arrelano and Bond (1991), the model estimation uses instrumental variable or IV to form Difference GMM equation where the first lag of FLP used as IV in the following model:

$$FLP_{it} = \alpha_i + \rho FLP_{it-1} + \beta_1 lnGDP_{it} + \beta_2 (lnGDP_{it})^2 + \rho X_{it} + \mu_i + \varepsilon_{it} \quad (3)$$

By including dependent variable lag, historical factor of FLP can be partially captured in the model (Altuzzara, Gálvez-Gálvez, dan González-Flores, 2019). The original FLP model did not include control variable because it was focused on the reduced form of FLP and economic development relationship. Furthermore, the potential control variable for the hypothesis, such as education and fertility rate, are some transmission channels which probably form the U curve, thus they are not included in the model. But, to do a robustness check, the reduced in this research will be compared to the model with X_{it} as control variable vector, consist of life expectancy rate, fertility rate, secondary and tertiary education, and the unemployment rate.

System GMM (Sys GMM) by Arellano and Bover (1995) and Blundell and Bond (1998) correcting the issues from Difference GMM (Dif GMM) because the first lag tends to be less suitable as the instrument for the first difference variable (Baum, 2006). Furthermore, System GMM also able to solve autocorrelation problem more optimally. Yet, the System GMM was not being used by Verme (2015) and Gaddis and Klasen (2014) since the assumption that lagged variable instrument does not correlate with the individual effects (countries/years) are found to be too restrictive and hard to be maintained. In this research, System GMM will also be used for the dynamic regression model as in Luci and Tam (2011), along with the Difference GMM for the purpose of checking the robustness of dynamic econometrics model. To analyse the structural change, this paper also observed the value-added changes in the agriculture, industrial, and service sector as in Verme (2015). The decrement of value added in the service sectors indicates a structural change is happening in Asian economies.

III. Results and Discussion

On average, female labour participation in Asia from 1990 to 2018 is 48.7% of the female productive age population. On average, women in Asia have 3 children, 73% of the female population have a secondary education, and 30% for tertiary education (Table 1).

Variable	Number of observations	Mean	Min	Max	Standard Deviation
FLP	1,479	48.74	6.246	84.98	20.49
GDP	1,373	19,095	715.9	124,025	24,568
Life Expectancy	1,428	69.84	48.49	84.68	6.549
Fertility	1,428	2.978	0.901	8.606	1.35
Secondary School	845	73.09	5.943	123.6	26.25
Tertiary School	796	30.92	0.283	91.2	22.46
Unemployment	1,428	5.355	0.140	19.7	3.948

Table 1. Descriptive Statistic for Feminization U Curve in Asia 1990-2018

Source: World Bank Database (2019)

From the static model regression, FLP and PDB relationship form a U curve, in both OLS and Fixed Effects model (Table 2). This result confirms that Feminization U Curve hypothesis apply in Asia (β_1<0 dan β_2 >0), FLP experience decrement when structural change from agricultural sector to industry sector was happening, and then increases when structural change to service sector occurring. In addition, from the static regression, it also can be seen that fertility rate and female labour force participation has a negative relationship, while tertiary education has a positive impact.

Structural change in Asia could be observed from the dynamics of sectoral contributions to the GDP in every decade (Verme, 2015). From Table 3, it can be confirmed that Asian countries economies leaving the agricultural sector, indicated by negative value-added change in the last to decade. The country group undergoing a structural change to the industry and service economies instead, indicated by the positive value-added change for both sectors, with bigger GDP contribution from the service sector. Transition in the industry sector was not followed by the absorption of female labour in the sector, even the female worker in the sector was decreasing since 1990 (Figure 1). While the development to the service sector followed with the increment of female worker in the service sector.

	(1)	(2)	(3)	(4)
VARIABLES	OLS	OLS	Fixed Effects	Fixed Effects
lnGDP	-42,39***	-53,62***	-27,62*	-33,12***
	(6,298)	(8,673)	(15,99)	(10,86)
$(lnGDP)^2$	2,195***	2,712***	1,606*	1,756***
	(0,331)	(0,448)	(0,942)	(0,647)
Life Expectancy		-0,957***		0,109

		(0,213)		(0,226)
Fertility		-7,425***		-1,620**
		(0,789)		(0,709)
Secondary School		0,0369		-0,0642*
		(0,0461)		(0,0337)
Tertiary School		0,266***		0,126***
		(0,0335)		(0,0387)
Unemployment		-1,411***		0,0951
		(0,180)		(0,132)
Constant	249,8***	395,6***	164,8**	201,6***
	(29,52)	(41,40)	(66,41)	(49,05)
Observations	1.373	543	1.373	543
R-squared	0,035	0,339	0,058	0,425
Number of code			49	46

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

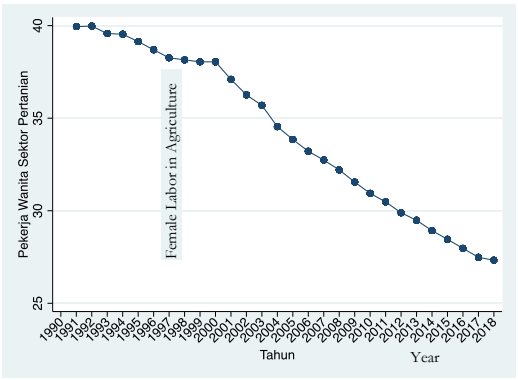
Table 2. Result for Static Model Regression of Feminization U Curve in Asia 1990-2018

Source: World Bank Database (2019)

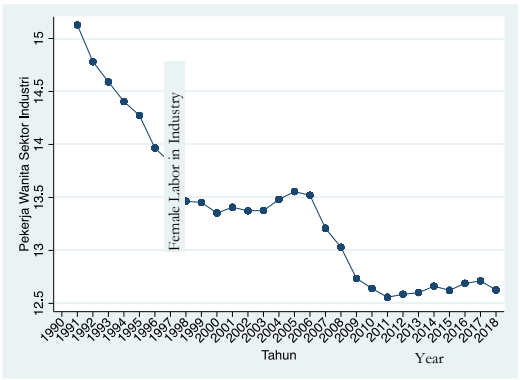
Sector	1990-1999 vs 2000-2009	2000-2009 vs 2010-2018
Agriculture	-5.37	-3.18
Industry	1.06	0.14
Service	4.35	4.35

Table 3. Average Change of Sectoral Value Added (%GDP) in Asia

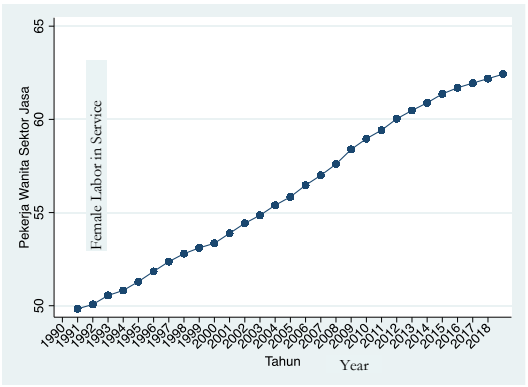
Source: World Bank Database (2019)



(a)



(b)



(c)

Figure 1. Average Female Labour Force Participation in the (a) Agriculture Sector; (b) Industry Sector; (c) Service Sector, in Asia 1990-2018

Source: World Bank Database (2019)

In the dynamic model regression, GDP variable of Feminization U Curve hypothesis found to be significant under Difference GMM model with control variable (Table 4). With all the dynamic model results, the direction of the coefficient consistent with the hypothesis (β_1<0 dan β_2 >0). Lag variable of FLP found to have a positive significant relationship with the FLP in the current year, this indicates that the realization of female labour force participation from the previous period have a significant impact to the following year's rate, thus it can be concluded that dynamic or historical factor is important for the FLP realization. The result of lag FLP variables from GMM regression significant for both Difference and System GMM without control variables, this indicates that FLP tends to be persistent without controlling other variables that could potentially affect FLP. This variable persistence is the reason why the control variable is not significant in the dynamic model, or it can be said that FLP incline to be affected by its realization in the previous period rather that the control variable which can transmit to FLP changes in the current period. All of the control variable has the expected relationship with the FLP even though they are not significant, fertility rate has a negative relationship while tertiary education has positive relationship. As suggested by the previous research by Verme (2015), to further test the robustness of the model in a different country income category, static regression also being conducted for the middle- and high-income country group (Table 4 and 5). While the dynamic regression cannot be conducted for the income-categorized model since the income-categorization of country reduce the number of observations, so the data does not fulfil the characteristic of *"small T, large"* which is preferred for GMM method. From both segregated regressions, *lnGDP* found to form U relationship with *FLP* both for the middle income and high-income countries in Asia. In addition, fertility rate found to be consistent with the previous regression, which has a negative significant relationship with FLP. Secondary education has a negative significant relationship in the fixed effect model, while tertiary education has a positive relationship, these results consistent with the fixed effects of the uncategorized model. The positive sign of unemployment rate in the middle-income country indicates that there is a "discouragement effect", which means female labour force participation will decrease when there is an increment of unemployment rate.

	(1)	(2)	(3)	(4)
VARIABLES	Dif GMM	Dif GMM	Sys GMM	Sys GMM
FLP_{it-1}	0.891***	0.294	0.953***	0.887***
	(0.0650)	(0.192)	(0.0423)	(0.190)
lnGDP	-3.198	-21.21**	-2.463	-6.224
	(3.901)	(9.490)	(1.650)	(11.82)
$(lnGDP)^2$	0.194	1.084**	0.138	0.322
	(0.227)	(0.530)	(0.0916)	(0.601)
Life Expectancy		0.319		-0.145
		(0.215)		(0.266)
Fertility		-0.276		-0.879
		(0.593)		(1.516)
Secondary School		-0.0117		0.0130

		(0.0160)		(0.0290)
Tertiary School		0.0217		0.0256
		(0.0302)		(0.0567)
Unemployment		-0.0227		-0.207
		(0.0674)		(0.270)
Constant			13.11*	47.37
			(7.805)	(82.86)
Observations	1,281	416	1,330	543
Number of code	49	42	49	46

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 4. Result for Dynamic Model Regression of Feminization U Curve in Asia 1990-2018

Source: World Bank Database (2019)

This research focused to the model with consider time invariant heterogeneity since according to Gaddis and Klasen (2014) emphasize on the importance of historical factor, such as culture and social norm, as a significant factor that affected female empowerment in a country. This historical factor of a country forms the culture and social norm in the society and construct their perspective on the role of women in the workplace. According to Boserup (1970), one of the affecting historical factors is the traditional agriculture sector in the past. A society which previously did their farming activities by ploughing which needed more of the men rather than women, has a lower female participation in the current economy and politics. In this regard, historical factors form a certain perception towards female roles and behaviour, which correlates significantly with female labour supply (Fernandez, 2007). From another research in India, it was found that in a region where there has never been a female local leader, 86% of the parents prefer their daughter to be a housewife or anything that is preferred by their son-in-law. The previous female role will form a perception or social stigma that female is not supposed to have a role in public activities or workplace, this will further cause a higher limitation of how women should allocate their time.

Another factor which can contribute to the dynamics of female economic activity is an occurrence of a shock, this even cause a permanent rise of female participation (Goldin, 1991). For the case of Asian countries, the shock which ever happened in the region was the 1997 Asian financial crisis. The shock is possibly one of the explanations of the persistence of FLP in the Asia, which after 2000, grow constantly 7% annually. This post-crisis increment of female economic activity is one of the coping mechanisms to deal with the impact of the crisis, along with the jobs increment in the industry and service sector for female worker (Lim, 2000).

	(1)	(2)	(3)	(4)
VARIABLES	OLS	OLS	FE	FE
lnGDP	-81.11***	-16.27	-32.63***	-51.88***
	(15.62)	(19.70)	(10.24)	(12.55)
$(lnGDP)^2$	4.555***	0.946	1.878***	2.999***
	(0.900)	(1.122)	(0.590)	(0.757)
Life Expectancy		-2.537***		0.326
		(0.329)		(0.219)
Fertility		-9.255***		-1.304
		(1.105)		(0.891)
Secondary School		0.153***		-0.0865***
		(0.0568)		(0.0292)
Tertiary School		0.189***		-0.0207
		(0.0424)		(0.0374)
Unemployment		-1.320***		0.226**
		(0.190)		(0.102)
Constant	407.9***	311.9***	190.3***	260.9***
	(67.51)	(84.94)	(44.50)	(59.57)
Observations	909	333	909	333
R-squared	0.034	0.415	0.086	0.270
Number of code			32	31

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5. Result for Static Model Regression of Feminization U Curve in Asian Middle-Income Countries, 1990-2018

Source: World Bank Database (2019)

VARIABLES	(1) OLS	(2) OLS	(3) FE	(4) FE
lnGDP	-186.2***	-226.7***	185.0	-119.5*
	(56.92)	(56.24)	(155.8)	(61.19)
$(lnGDP)^2$	8.485***	10.76***	-8.368	5.669*
	(2.640)	(2.655)	(7.470)	(2.957)
Life Expectancy		1.771***		0.419
		(0.353)		(0.789)
Fertility		-4.228***		-1.428
		(0.867)		(1.431)
Secondary School		0.0203		-0.0789
		(0.0571)		(0.0536)
Tertiary School		-0.0216		0.187***
		(0.0406)		(0.0531)
Unemployment		1.365***		6.82e-05
		(0.154)		(0.176)
Constant	1,068***	1,109***	-970.4	650.4*
	(306.0)	(280.7)	(811.3)	(317.8)
Observations	361	167	361	167
R-squared	0.039	0.676	0.191	0.780
Number of code			13	11

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6. Result for Static Model Regression of Feminization U Curve in Asian High-Income Countries, 1990-2018

Source: World Bank Database (2019)

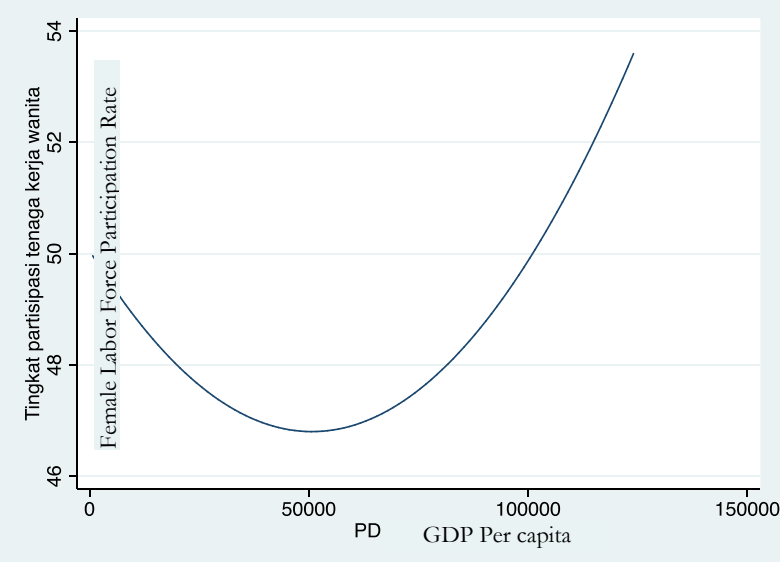


Figure 2. Quadratic curve of female labour force participation and economic development in Asian countries 1990-2018

Source: World Bank Database (2019)

With a visual analysis as conducted by Goldin (1995) (Figure 2), the relationship of economic development and female labour force participation form a U curve with a turning point in the GDP per capita level of 50,712 USD and FLP of 47%. While the average of GDP per capita income of the Asian countries in 2018 is 19,095 USD with 49% FLP. This means that the average countries in Asia have not passed that GDP threshold and still on the deceasing slope of U curve, and along with the economic growth, the FLP could be decreased to the level of 47% without any policy to maintain the level.

From the static and dynamic with the data from the Asian countries confirmed a U curve relationship of FLP and economic development, and it's also confirmed in the categorized model of middle- and high-income countries. But the U curve form is more consistent in the static model estimation rather than in the dynamic one. This finding aligns with the result of Gaddis & Klasen (2014), that U curve tends to disappear when estimated using dynamic method which caused by a significant difference of the structural change pattern within the region or between each country. Although this research has been conducted in a lower level or narrower scope, which is in Asian region instead of world countries compared to the previous studies, the dynamic model of FEMU is mostly not significant thus it indicates a significant difference in the structural transformation even between each country within the same region. The most robust model is Difference GMM with control variable, this finding aligns with Altuzzara, Gálvez-Gálvez, & González- Flores (2019). System GMM estimation does not show any significant GDP variable, similar with the result of Luci (2009). Confirming the two research, the dynamic model has no significant control variable due to the high persistence of the FLP variable, indicated by the positive sign and significant of *lagFLP* variable.

On some regression result above, such as in fixed effect of all countries and middle-income country specifically, female secondary education has a negative relationship with FLP while the tertiary education has a positive relationship. This reflects that female labour force participation will increase when they have finished their tertiary education. Gronau (1977) explain that in some countries with rather low education quality, the available jobs are mostly in the traditional agriculture or manufacture jobs which tends to be included as manual labour, which bring a certain social stigma barrier for female to enter. Enhanced by the original work from Goldin (1955), female labour force participation will increase along with the increase of non-manual labour or white-collar jobs, which only available for the graduate of tertiary education. Thus, secondary education is not enough to increase the contribution of female population to the labour market or the economy.

IV. Conclusions

From the static and dynamic econometrics model analysis, overall, the relationship of economic development and female labour force participation forms a U curve. Thus, it can be concluded that Feminization U Curve hypothesis is confirmed to apply in the Asian countries, i.e. female labour force participation decreases when the structural change to industrial sector occurs and increases when the economy begins to shift to the service sector. Other variable such as fertility rate consistent to affect negatively to the female labour force participation in the last 3 decades, since the more children a household have, the more time of women to be allocated at home due to the strong cultural norms of domestic role that female is the only caretaker in a household. Secondary education has negative relationship while tertiary education has a positive relationship in some of the regression

results, this indicates that secondary education itself is not enough to increase female participation in the economy. While female tertiary education, which significantly increase since 1990, found to have a significant impact to improve female participation in the labour market.

Labour policies such as by giving certain quota to female worker in the workplace to create gender equality in work can maintain the female labour force participation in the country (Gaddis & Klasen, 2014). To protect the female worker in the industry sector, economic policy which oriented to light-manufacture sector can be encouraged, especially for the country with a rapid economic development (World Bank, 2011; Klasen & Lamanna, 2009). Furthermore, policy to encourage female population to do entrepreneurship, such as by conducting training and easing the productive credit, can be effective since it will create a new job especially if the manufacture sector cannot absorb female workforce (Pigantti, 2016).

References

ADB (2016) Female Labor Force Participation in Asia: Key Trends, Constraints, and Opportunities. *ADB Briefs, 71*, 1–8. https://www.adb.org/sites/default/files/ publication/209666/female-labor- force-participation-asia.pdf.

Altuzarra, A., Gálvez-Gálvez, C., & González-Flores, A. (2019) Economic Development and Female Labour Force Participation: The Case of European Union Countries. *Sustainability, 11*(7). https://doi.org/ 10.3390/su11071962.

Arellano, M. & Bond, S. (1991) Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies, 58*(2), 277. https://doi.org/ 10.2307/2297968.

Arellano, M. & Bover, O. (1995) Another Look at the Instrumental Variable Estimation of Error-Components Models. *Journal of Econometrics, 68*(1), 29–51. https://doi.org/10.1016/0304-4076(94)01642-D.

Bastos, A., Casaca, S.F., Nunes, F., & José Pereirinha, J. (2009) Women and Poverty: A Gender-Sensitive Approach. *Journal of Socio-Economics, 38*(5), 764–78. https://doi.org/10.1016/j.socec.2009.03.008.

Baum, C.F. (2006) *An Introduction to Modern Econometrics Using Stata*. Stata Press.

Boserup, E. (1970) *Women's Role in Economic Development*. New York: St. Martin's Press.

Blundell, R. & Bond, S. (1998) Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics, 87*(1), 115–43. https:// doi.org/10.1016/S0304-4076(98)00009-8.

Çağatay, N., & Özler, S. (1995) Feminization of the Labor Force: The Effects of Long-Term Development and Structural Adjustment. *World Development, 23*(11), 1883–94. https://doi.org/ 10.1016/0305-750X(95)00086-R.

Chenery, H. B. (1960) Patterns of Industrial Growth. *The American Economic Review, 50*(4), 624–54. https://www.jstor.org/stable/1812463.

Fernández, R. (2007) Alfred Marshall Lecture Women, Work, and Culture. *Journal of the European Economic Association, 5*(2–3), 305–32. https:// doi.org/10.1162/ jeea.2007.5.2-3.305.

Gaddis, I. & Klasen, S. (2014) Economic Development, Structural Change, and Women's Labor Force Participation: A Re-examination of the Feminization U Hypothesis. *Journal of Population Economics, 27*(3), 639– 81. https://doi.org/ 10.1007/s00148-013-0488-2.

Goldin, C. (1995) The U-Shaped Female Labor Force Function in Economic Development and Economic History. *National Bureau of Economic Research, 4707.* https://www.nber.org/papers/w4707.pdf.

Gronau, R. (1977) Leisure, Home Production, and Work-the Theory of the Allocation of Time Revisited. *Journal of Political Economy*. https:// doi.org/10.1086/260629.

Kim, K. & Salazar, D.R.C. (2018) Toward Gender-Focused Governance Reform in Asia. *ADBI Policy Brief, 4*. https://www.adb.org/ sites/default/files/ publication/471961/adbi-pb2018-4.pdf.

Lim, J. Y. (2000) The Effects of the East Asian Crisis on the Employment of Women and Men: The Philippine Case. *World Development, 28* (7), 1285–1306. https:// doi.org/10.1016/S0305-750X(00)00023-1.

Luci, A. (2009) Female Labour Market Participation and Economic Growth. *International Journal of Innovation and Sustainable Development, 4*(2–3), 97–108. https://doi.org/10.1504/IJISD.2009.028065.

Mammen, K. & Christina Paxson, C. (2000) Women's Work and Economic Development. *Journal of Economic Perspectives,* 1*4*(4), 141–64. https:// doi.org/ 10.1257/jep.14.4.141.

Schultz, T. P. (1990) Women's Changing Participation in the Labor Force: A World Perspective. *Economic Development and Cultural Change, 38*(3), 457–88. https:// www.jstor.org/stable/1153746.

Swaminathan, H., Lahoti, R., & Suchitra, J.Y. (2012) Women's Property, Mobilty, and Decisionmaking. *International Food Policy Research Institute*, *1188*. https:// doi.org/http://www.ifpri.org/publication/women-s-property-mobility-and- decisionmaking.

Miguel, E. (2005) Poverty and Witch Killing. *Review of Economic Studies, 72* (4), 1153–72. https://doi.org/10.1111/0034-6527.00365.

Todaro, M.P. & Smith, S.C. (2015) *Economic Developmen*t. 12th edition. New Jersey: Pearson.

UN Women (2019) Progress on the Sustainable Development Goals: The Gender Snapshot 2019. https:// www.unwomen.org/-/media/headquarters/attachments/sections/ library/ publications/2019/progress-on-the-sdgs-the-gender-snapshot-2019-two- page- spreads-en.pdf?la=en&vs=5814.

UN Women (2019) UN Women Annual Report 2018-2019. https://www.unwomen.org/-/ media/annual report/ attachments/sections/library/2019/un-women-annual- report-2018-2019- en.pdf?la=en&vs=4621.

Verme, P. (2015) Economic Development and Female Labor Participation in the Middle East and North Africa: A Test of the U-Shape Hypothesis. *IZA Journal of Labor and Development 4*(1), 1–21. https://doi.org/10.1186/ s40175-014-0025-z.

World Bank (2019) World Bank Open Data. The World Bank, 2019. https:// data.worldbank.org/