DOES GENDER EQUALITY IMPACT REGIONAL ECONOMIC GROWTH?: A CASE STUDY IN WEST JAVA PROVINCE USING ECONOMETRIC ANALYSIS

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Abstract: *This research aims to examine the impact of gender equality on regional development, represented by regional economic growth. The analysis applies econometric methods to panel data from 27 districts/cities in West Java Province for the 2018–2022 period, with the Common Effect Model (CEM) selected as the optimal regression model for this study. Gender equality is represented by indicators such as the ratio of female to male in per capita expenditure, mean years of schooling, life expectancy, and labor force participation rate. The findings reveal heterogeneous effects: gender equality in per capita expenditure, education, and health positively influences economic growth, with health, as measured by life expectancy, being the most significant factor. Conversely, the labor force participation rate exhibits a negative effect, indicating challenges in optimizing female's roles in the labor market. Overall, the study finds that gender equality development contributes 12.34% to West Java's economic growth. These findings highlight the need to provide equal opportunities for female by enhancing access to education, healthcare, and economic resources while addressing barriers in labor force participation to achieve inclusive and sustainable development.*

Keywords*: Econometrics Analysis, Economic Growth, Gender Equality, Regional Development.*

Abstrak: Penelitian bertujuan menguji pengaruh kesetaraan gender terhadap pembangunan wilayah yang dalam hal ini diwakili oleh laju pertumbuhan ekonomi wilayah. Pengujian menggunakan analisis ekonometrika pada data panel 27 kabupaten/kota di Provinsi Jawa Barat periode 2018-2022 dan terpilih *Common Effect Model* (CEM) sebagai model regresi terbaik untuk analisis ini. Kesetaraan gender direpresentasikan melalui indikator seperti rasio perempuan terhadap laki-laki dalam pengeluaran per kapita, rata-rata lama sekolah, angka harapan hidup, dan tingkat partisipasi angkatan kerja. Hasil menunjukkan efek yang beragam: kesetaraan gender dalam pengeluaran perkapita, pendidikan dan kesehatan memberikan dampak positif pada pertumbuhan ekonomi, dengan kesehatan, diwakili harapan hidup, menjadi faktor yang paling signifikan. Namun, tingkat partisipasi angkatan kerja menunjukkan pengaruh negatif, yang mengindikasikan adanya tantangan dalam mengoptimalkan peran perempuan di pasar tenaga kerja. Secara keseluruhan, penelitian ini menemukan bahwa pembangunan kesetaraan gender berpengaruh sebesar 12,34% terhadap pertumbuhan ekonomi Provinsi Jawa Barat. Hasil ini menyoroti perlunya menyediakan kesempatan yang sama kepada perempuan melalui memperkuat akses terhadap pendidikan, layanan kesehatan, dan sumber daya ekonomi sambil mengatasi hambatan dalam partisipasi tenaga kerja untuk mencapai pembangunan yang inklusif dan berkelanjutan.

Kata Kunci: Ekonometrika, Kesetaraan Gender, Pembangunan Wilayah, Pertumbuhan Ekonomi.

I. **Introduction**

Every country strives to increase economic growth inclusively and stably to enhance the well-being of people, which refers to the condition when the population can meet socio-economic needs (Burchi et al., 2022; Patel et al., 2012). According to the United Nations Development Program (UNDP), increasing economic growth is expected to not only reduce poverty but also promote gender equality. Susan & Natu (2023) further emphasize that gender equality is not only a catalyst for economic growth but also crucial for social justice. Gender equality refers to a condition in which female and male have equal opportunities to enjoy human rights, have equal access to ownership, opportunities, and resources, and can get the benefits of development results (USAID, 2023).

Gender equality and justice are one of the global goals of countries in the world that are committed to the Sustainable Development Goals (SDGs) (Gök & Gök, 2023). On a national scale, the Indonesian Government has also committed to realizing gender equality and justice through Presidential Instruction Number 9 of 2000 concerning Gender Mainstreaming (PUG) in National Development which instructs all state officials, including Governors and Regents/Mayors, to implement PUG throughout Indonesia. According to the 2024 Global Gender Gap Index released by the World Economic Forum, Indonesia ranks 100th from 146 countries with a score of 0.686, significantly trailing behind the Philippines, another ASEAN country, which ranks 25th (0.779), and Iceland, which holds the top position with a score of 0.935. This indicates that the implementation of gender equality in Indonesia, in the global context, remains far from achieving parity between female and male.

Based on economics statistical data, Indonesia's economy grew from 5.17% in 2018 to 5.31% in 2022. During the same period, the Gender Development Index (GDI) also increased from 90.99% to 91.63%. The GDI is a measure that compares the achievements of Human Development Index (HDI) between male and female based on the methodology used by the UNDP in 2010. The closer the GDI value is to 100, the more equal development between female and male and vice versa.

In reality, vulnerable female often faces limited access and marginalized in various opportunities such as education (Andersson & Harnois, 2020; Najam, 2024), health (Andersson & Harnois, 2020), and employment (Kalev & Deutsch, 2018; Rim & Kim, 2024). In Indonesia, the issue of gender inequality remains a critical development challenge that cannot be avoided (Ramadhan & Fauzi, 2023). This is evident in the labor force participation rates by gender in Indonesia, as depicted in **Figure 1**, which shows that female's participation rates are consistently lower than male's from 2018 to 2022.
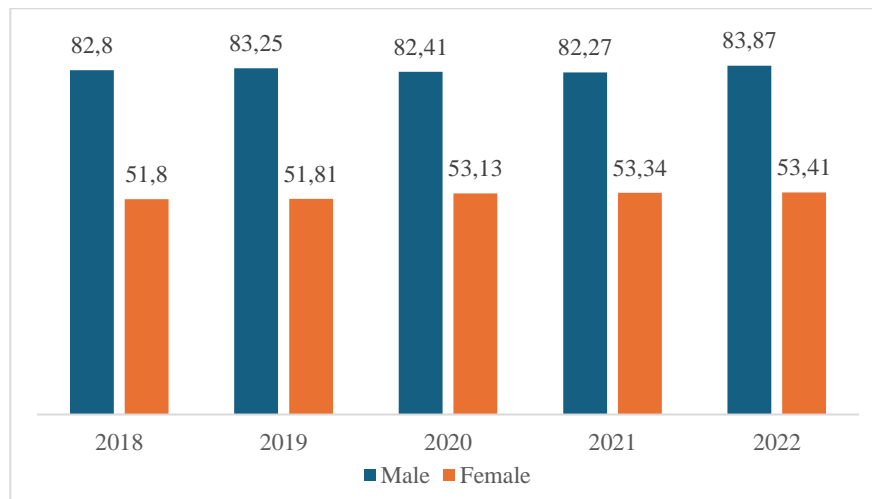
Figure 1. Percentage of Labor Force Participation Rate by Gender in Indonesia

(Source: BPS, *processed*)

According to the Ministry of Finance's Gender Mainstreaming Team (2022), three provinces have gender inequality indicators that are consistently higher than the national average, despite their economic growth being above the national average for the past decade. One of these provinces is West Java. BPS data indicates that the economic growth of West Java Province and the national economy declined from 2018 to 2020, but then rebounded in the following two years, with West Java Province's growth rate tending to outpace the national average. However, the national GDI remained significantly higher than West Java Province during the same period, despite both showing an increasing trend. This has prompted the government to prioritize West Java Province for addressing gender inequality in Indonesia. The GDI pattern was related to mean years of schooling and labor force participation rate in **Figure 3**, which the ratio showed women in West Java were still left behind men about 1 year in education and 50% chance in employment. Furthermore, based on the component of Gender Empowerment Index (GEI) in West Java, female just contributed 30% for the regional income which about 42,91% of them as professional workers and 21,85% involvement in parliament during 2022 (BPS, 2024h).
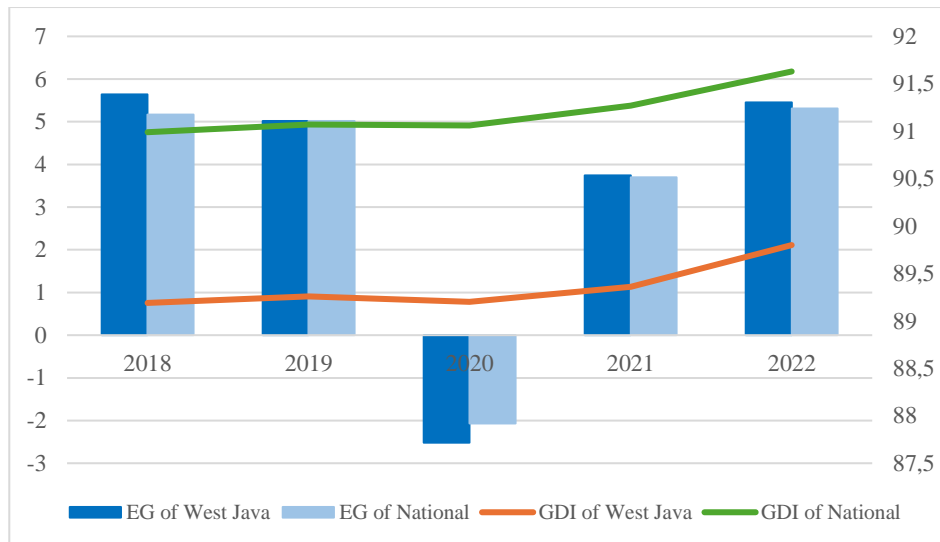
Figure 2. Comparison of Economic Growth Rate and GDI between West Java Province and National 2018-2022 (Source: BPS, *processed*)

Economic growth has been the subject of numerous studies conducted in Indonesia, but the investigation of gender equality influence to the trend remains limited. Lukiswati et al. (2020) conducted research that demonstrated the affect of various factors such as elementary, junior high school, and high school participation rates, life expectancy, health issues, per capita expenditure, and labor force participation on GDI in Central Java from 2011 to 2015. Additionally, Elisa (2022) studied the variables affecting GDI in West Sumatra Province from 2017 to 2020, including expected and mean schooling duration, labor force participation, health issues, and per capita expenditure. However, just a few depth works have been carried out in West Java as the gender inequality's top priority. Based on the urgency described above, this study aims to explore the impact of gender equality on economic growth in the context of West Java Province, focusing on education, health, income, and job opportunities.

Therefore, this study will utilize similar variables with adaptations to the components of GDI, focusing on average schooling duration for education, life expectancy for health, per capita expenditure for the economic aspect, and labor force participation for employment opportunities. **Figure 3** presents a graph illustrating the ratio of each gender equality variable to be analyzed in West Java Province.

This research will utilize econometric analysis and regression theory. Econometrics is a social science that applies economic tools, mathematics, and inferential statistics to analyze economic phenomena Gurajati (2006). This study aims to assess the impact of gender equality on regional economic growth in West Java Province by: 1) constructing a mathematical model for econometric analysis and 2) interpreting the results of the model to elucidate the impact of gender equality on economic growth in West Java Province, both partially and generally.
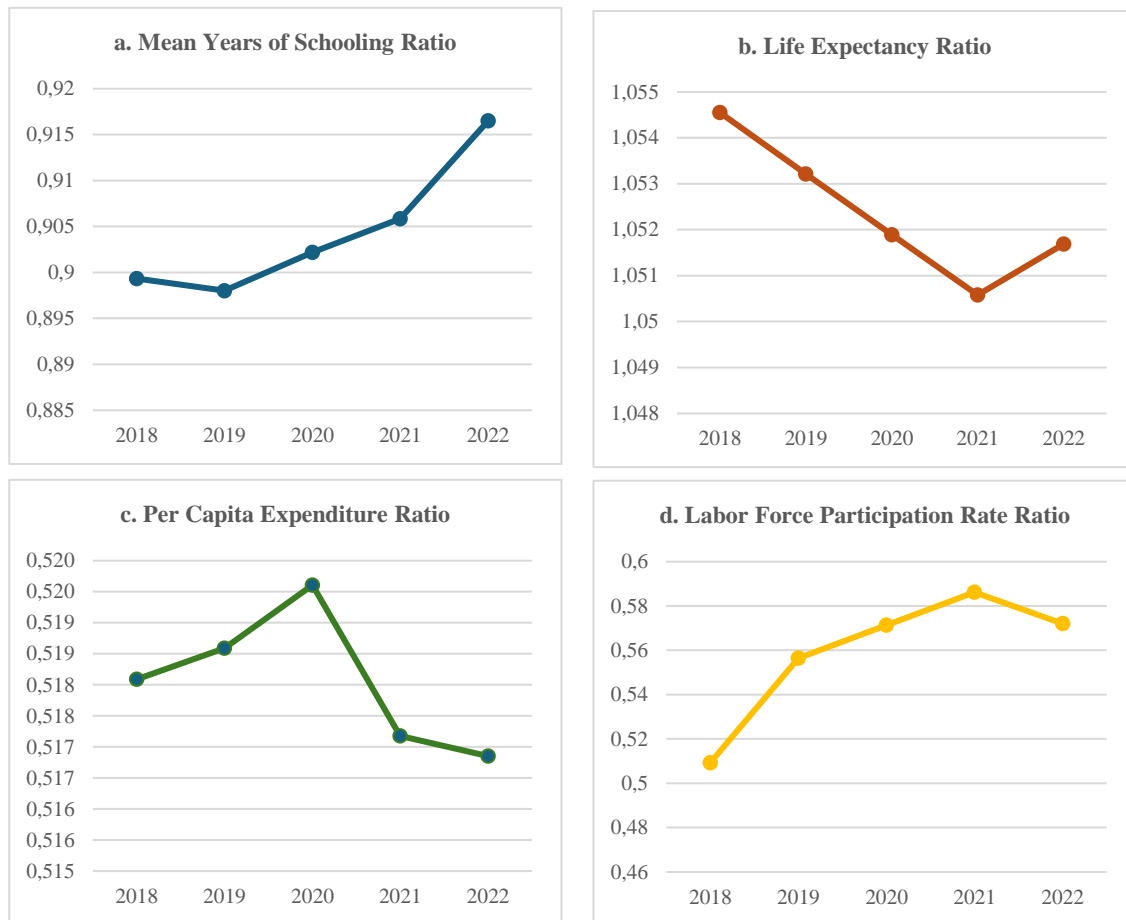
Figure 3. Female Participation Rate in

West Java Province 2018-2022

(Source: BPS, *processed*)

II. Literature Review

Gender Equality

Gender equality is a concept that emphasizes the importance of equal rights, responsibilities, and opportunities between female and male in all aspects of life, including social, political, and economic. Guo et al. (2024) emphasized that these rights should cover all individuals regardless of gender so that everyone has an equal opportunity to develop. Gender

equality is highlighted as essential for ensuring equal access to opportunities and resources, as well as for enabling individuals to participate in decisions that impact their lives. It is also identified as a crucial factor for achieving sustainable development, emphasizing that everyone must have equal rights and chances to engage in social, economic, and political activities. Therefore, gender equality is not only a moral obligation but also a key requirement for building a fairer and more sustainable society, particularly in promoting equal rights for female.

Many factors contribute to gender inequality, including social norms, government policies, and economic structures. According to Grown et al. (2016), rigid gender norms often limit female's roles in society, leaving them underrepresented in the formal sector and in leadership positions. For example, in many countries, female still face challenges in accessing education on par with male, which impacts their participation in the workforce. In addition, female working in the informal sector often lack legal protection or social security, leaving them vulnerable to exploitation and economic uncertainty. Research by Kabeer (2015) suggests that achieving substantial gender equality requires addressing both the structural and cultural factors that hold back female's progress.

A human rights-based approach to promoting gender equality is becoming increasingly relevant, as it emphasizes the responsibility of states and societies to ensure that female's rights are protected and respected. This strategy includes the implementation of policies that support gender equality at the local and national levels, such as anti-discrimination laws, equal education programs, and economic empowerment efforts. Kartiwi et al. (2022) emphasize that policies and conditions also should be structured to ensure women have equitable access to information, opportunities for innovation, and platforms to express their opinions. Gender equality is not just a female's issue, but a shared responsibility that must be promoted to achieve a more just and prosperous society.

Gender Equality and Economic Growth

Gender equality, encompassing both opportunities and outcomes for male and female, stands as a fundamental component of human development (UNDP, 1995). Susan & Natu (2023) highlight that gender equality is not only imperative for social justice but also functions as a catalyst for economic growth. Moreover, World Economic Forum (2024) elucidates that gender equality is not solely a matter of morality but also a pivotal factor in economic and social development. Nations that exhibit greater gender equality tend to witness enhanced economic growth, substantial poverty reduction, and advancements in health and education.

Moreover, gender equality that facilitates female's empowerment ultimately contributes to the enhancement of well-being (Marthalina, 2018).

The progression of an economy toward a stable state is typically followed by heightened income (Davoodi et al., 2021; Pal & Bandyopadhyay, 2022). This advancement is delineated by a rise or fall in figures calculated annually, reflected nationally through Gross Domestic Product (GDP) and regionally through Gross Regional Domestic Product (GRDP) that encapsulates all real added value generated from the economic activities. In a broader context, economic development encompasses elements of human resource development, with high regional income closely associated with robust human resource development. Conversely, high income correlates with minimal inequality, which is often experienced by female facing challenges in accessing health and education (Arora, 2012; Chakraborty & Chatterjee, 2020).

Iqbal et al. (2022) in their study involving 59 developing countries, found evidence a relationship between economic growth, as represented by an increase in Gross Domestic Product (GDP), and gender equality. Consistent with these findings, Agénor & Canuto (2015) emphasize that strengthening gender equality has a substantial impact on long-term growth in Brazil. Recent studies also, in Cote d'Ivore, demonstrate that improved economic growth can be achieved through the implementation of pro-gender policies (Adoho & Alpaslan, 2024). This underscores the significant link between gender equality generally and economic growth as the global issue, particularly in the global south countries.

Specifically, Morally (2020) expounds that gender equality is explicated through neoclassical theory, which accentuates gender disparities in various factors that affect labor productivity. These variables encompass education, skills, length of working hours, household responsibilities, and physical strength. This is gauged by the GDI components, with the quality of education dimension employing the expected length of schooling and the average length of schooling, health utilizing life expectancy, and the economic dimension utilizing per capita expenditure.

Gender inequality in education has the potential to diminish average human capital and impede economic performance, as the country loses its economically active productive age population (Cuberes & Teignier, 2011). Despite Indonesia's notable progress in reducing inequality in education between male and female, the level of productivity and participation of the female workforce remains subpar (Sitorus, 2016). Additionally, female are more vulnerable physically, making the enhancement of female's health and education are a governmental priority to improve the quality of human resources.

According to Bedir Kar & Coskun (2020), Harahap (2014), and Sitorus (2016), gender inequality in education, health, and labor significantly affects economic growth. Novtaviana (2020) also explored the impact of GDI and the Gender Empowerment Index (GEI) on GRDP, revealing a simultaneous and partial affect of these variables on economic growth. The researches further strengthens the important of equal access to education, health, and employment opportunities for both female and male as a pivotal factor in achieving social justice. Nations that narrow gender gaps in education typically experience heightened economic growth (Kattan et al., 2023). Furthermore, female's improved health contributes to increased participation in the labor force and reduced mortality rates (WHO, 2019). Hence, policies supporting gender equality, such as investments in female's education, provision of access to quality health services, and establishment of inclusive work environments, are indispensable for achieving sustainable economic growth.

III.   Research Methodologies

Data

This study analyzes panel data from 27 regencies/cities in West Java Province. Based on data availability, the analysis period in this study is 2018-2022. The dependent variable in this study is economic growth (EG) seen from the growth rate of Gross Regional Domestic Product (GRDP) at constant prices. Meanwhile, the independent variables used are the ratio of female to male per capita expenditure (REP), the ratio of female to male labor force participation rate (RLFP), the ratio of female to male average length of schooling (RMYS), and the ratio of female to male life expectancy (RLE). REP and RLFP describe economic conditions (income and employment), RMYS describes the level of education, and RLE describes the level of health. Data collection uses secondary data available from the website of the Central Statistics Agency (BPS) of Indonesia.

Analysis Methods

Econometric analysis is used in this study. This numerical analysis shows the causal relationship to economic phenomena through panel data regression analysis. Panel data regression analysis is an analytical approach to cross-section and time series data (Baltagi, 2005) widely used in economic studies. It is expected that the use of this analysis can empirically prove the initial hypothesis in the study that the independent variables that describe gender equality (REP, RLFP, RMYS, RLE) have an effect on economic growth (EG) in Indonesia in the period tested.

The panel data regression model in this study is as follows:

$$EG_{it} = \beta_0 + \beta_1\, REP_{it} + \beta_2\, RLFP_{it} + \beta_3\, RMYS_{it} + \beta_4\, RLE_{it} + \mu_{it}$$

EG_{it} : GRDP growth rate at constant prices (ADHK)

REP_{it} : ratio of expenditure per capita of female to male in region i in year t

$RLFP_{it}$: ratio of labor force participation of female to male in region i in year t

$RMYS_{it}$: ratio of mean years of schooling for female to male in region i in year t

RLE_{it} : ratio of life expectancy of female to male in region i in year t

$\beta_0 - \beta_5$: parameters of the value function to be estimated

μ it : stochastic factor/random property

i : regency/city, 27 regencies/cities in West Java Province

t : period, time period 2018-2022

In order to prove the hypothesis in this study, there are three main stages carried out, all of which are analyzed using the statistical application, STATA. In summary, these stages are as follows:

1) Formulation and estimation of appropriate models

The steps that need to be taken in panel data regression analysis are choosing the best model **(Table 1).** Three models can be chosen, namely 1) Common Effect Model (CEM); 2) Fixed Effect Model (FEM) and 3) Random Effect Model (REM). CEM is the simplest technique for estimating panel data by combining time series and cross-section. The method used in CEM is Ordinary Least Square (OLS). Meanwhile, FEM is a technique for estimating panel data to see the difference in intercepts, especially in the use of dummy variables. Finally, REM is a panel data analysis technique for estimating disturbances that may be interrelated over time or between individuals.

Table 1. Econometric Model Estimation

Model Testing	Provision	Model Selection
Chow Test	Prob > 0.05	CEM
	Prob < 0.05	FEM
Haussman Test	Prob > 0.05	REM
	Prob < 0.05	FEM
Lagrange Multiplier (LM) Test	Prob > 0.05	CEM
	Prob < 0.05	REM

*Source: (Baltagi, 2005; Zulfikar, 2019)*

To select the best model, testing is carried out through three test models. First, Chow Test to test the best model between CEM and FEM. Second, the Haussman test to test the best model between FEM and REM. Third, the Lagrange Multiplier (LM) Test to select the best model between CEM and REM. Determination of the best model uses probability or p-value testing.

2) Classical Assumption Test and Hypothesis Test

After the model is estimated, the next step is to test the hypothesis. There are 3 parameters for hypothesis testing, namely: 1) Individual or partial significance test (t-test); 2) Simultaneous or overall significance test (F-test); and 3) Determination test (R-squared test). The magnitude of R-squared indicates how much effect partially the independent variables of gender equality (REP, RLFP, RMYS, and RLE) have on the dependent variable of economic growth (EG). Several other provisions that can be met in this test include: if F-count > F-table then simultaneously all independent variables affect the dependent variable. Meanwhile, if t-count > t-table then each independent variable affects the dependent variable partially. Both can also be tested through their significance value (sig.) 0.05. The general output of this hypothesis test is a regression equation model that shows how much affect gender equality (X) has on economic growth (Y).

To ensure that the regression equation model has accuracy in making estimates and is not biased and consistent as a prediction tool, it is necessary to verify the regression equation first through the classical assumption test. If the method used is OLS (CEM and FEM), then the assumption tests used are the multicollinearity test, heteroscedasticity test, and normality test. Meanwhile, if the method used is GLS (General Least Square), the classical assumptions that need to be met are the non-multicollinearity test and the normality test. In summary, the provisions in the assumption test are as follows: 1) If the correlation value is <0.75 or VIF (variance inflation factor) <10, then there is no multicollinearity; 2) If the p-value > α (0.05), then there is no heteroscedasticity symptom; and 3) If the p-value > α (0.05) from the Shapiro-Wilk test, then the panel data is normally distributed, and 4) Interpretation of the final results of the regression model. This section discussed the results of econometric analysis related to the effect of gender equality on economic growth, accompanied by a more in-depth discussion.

Figure 4. Research Analysis Framework *(Source: Analysis results, 2024)*
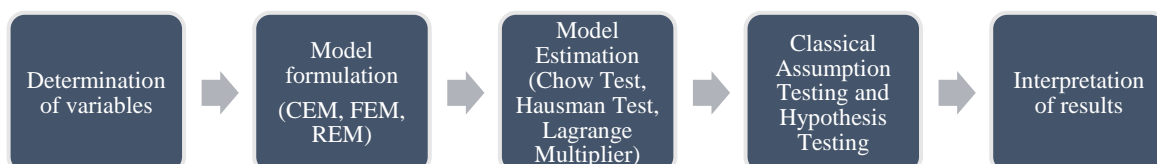
IV. Result and Discussion

Based on the panel regression model that has been formulated above, the Chow test is first carried out to determine the best model between CEM and FEM. The Chow test is carried out by looking at the P-value on the FEM regression results as seen in the following figure.

Table 2. Chow Test Results

Effect Test	Prob. value
F test	0.62
Chi-Square test	0.9219

Source: Analysis results, 2024

The regression results above show that the Prob>F value (0.922) is greater than $\alpha = 0.05$, meaning that H_0 is accepted. This shows that the best model in the Chow Test is CEM compared to FEM. The next step is the Lagrange Multiplier (LM) test to determine the best model between CEM and REM, the results of which are as follows.

Table 3. Results of the Lagrange Multiplier (LM) Test

Effect Test	Chibar	Prob. value
LM Test	0.000	1,000

Source: Analysis results, 2024

The LM test is also seen from the Prob>chibar2 value (1,000) which is greater than $\alpha = 0.05$. This means that H_0 is rejected, indicating that the best model is CEM compared to REM. After determining the best model, the next step is to conduct a classical assumption test. Because the selected model is CEM, the classical assumption test consists of a multicollinearity test, a heteroscedasticity test, and a normality test. The results of the classical test are shown in the table below:

Table 4. Classic Assumption Test Results

Multicollinearity Test				Heteroscedasticity Test	Normality Test
REP	RLFP	RMYS	RLE		
REP					
RLFP	0.2497				
RMYS	0.2849	0.2593			
RLE	-0.4431	-0.1332	-0.3635		
Chi value				0.88	
Prob>chi				0.3492	
Z value					-0.672

	Multicollinearity Test				Heteroscedasticity Test	Normality Test
	REP	RLFP	RMYS	RLE		
Prob>z						0.74930

Source: Analysis results, 2024

The correlation coefficient of all variables in the multicollinearity test results is <0.75, which means that there is no symptom of multicollinearity or that the variables used are free from multicollinearity. Then the P-value (Prob>chi) of the heteroscedasticity test is 0.3492> 0.05, so there is no symptom of heteroscedasticity. The P-value in the normality test using the Saphiro-wilk test also shows the results of Prob sig. 0.74930> 0.05, so it means that the data is normally distributed. It can be concluded that the model to be used meets the classical assumption tests. The results of the CEM model regression with the OLS method can be seen in the following figure.

Table 5. CEM Model Regression Results

Variables	Coefficient	Std. Error	t-Statistics	Prob. (sig.)
Cons.	-386,603	111.7149	-3.46	0.001
REP	4.054	2,346	1.73	0.086
RLFP	-7,331	3,677	-1.99	0.048
RMYS	19,380	6,805	2.85	0.005
RLE	355,605	103,850	3.42	0.001
Affect Value Specification				
R-squared	0.123			
Adj. R-Squared	0.096			
Prob>F	0.001			
Root MSE	2,691			
Number of Obs.	135			

Source: Analysis results, 2024

Based on the regression results, a model of the effect of gender equality on economic growth can be formulated as follows:

$PE_{it} = -386.6025 + 4.054281 REP_{it} - 7.331051 RLFP_{it} + 19.38046 RMYS_{it} + 355.605 RLE_{it}$

Next, the F-test is conducted to show that the independent variables have a combined effect on the dependent variable with the provision that H_0 is accepted if the probability of F-statistics > α (0.05) and H_0 will be rejected if the probability of F - statistics < α (0.05). **Table 5** shows the probability of F-statistics of 0.001 < α (0.05) which means H_0 is rejected and the estimated CEM model exists.

Meanwhile, the R-squared score describes the extent to which the variation of the independent variable can explain the variation of the dependent variable. The R-squared value shows that the variables of mean length of schooling, life expectancy, per capita expenditure, and labor force participation rate can explain the relationship to the dependent variable of economic growth of 12.34%. The rest is explained by other variables not included in this research model. To find out whether each independent variable has a significant effect partially on the dependent variable, the t-test is used. H_0 is not rejected if the probability of the t-statistic$> \alpha$, but if the probability of the t-statistic $< \alpha$ means H_0 will be rejected. The t-test of the model above can be explained as follows:

1) The variable of expenditure ratio per capita (REP) has a t-count of 1.73 < t-table 1.978 or a sig. value of 0.086 > 0.05, meaning that the expenditure ratio per capita has an affect but is not significant on economic growth partially;

2) labor force participation rate ratio (RLFP) with t-count 1.99 > t-table 1.978 or sig. value 0.045 < 0.05, meaning that there is a significant affect on economic growth partially;

3) average ratio of years of schooling (RMYS) has a t count of 2.85 > t table 1.978 or a sig. value of 0.005 < 0.05, meaning that there is a significant affect on economic growth partially;

4) life expectancy ratio (RLE) with t count 3.42 > t table 1.978 or sig. value 0.001 < 0.05, meaning that there is a significant affect on economic growth partially.

The regression model of the effect of gender equality on economic growth explains that every 1% increase in the ratio of female to male per capita expenditure (REP) will increase economic growth in West Java Province by 4.054%. This is by Haas's (2006) research which concluded that gender equality means that female tend to use their income fairly for girls and boys, allowing children to gain equal benefits and opportunities. These results are also in line with the findings of Roy et al. (2017) that female's income has a positive effect on education. This can lead to gender equality and economic growth in the long term.

Average length of schooling and life expectancy also have a positive effect on economic growth. The regression model shows that every 1% increase in the ratio of average length of schooling (RMYS) of female to male can increase economic growth in West Java Province by 19.38%. The increase in the ratio expanding educational opportunities for female is very beneficial for economic growth due to the following four things Schultz (1995): 1) The diminishing of return on female's education in developing countries is higher than male's education; 2) Increasing female's education contributes to increased productivity in the agricultural and industrial sectors, increasing participation in the labor force, delaying the age

of marriage, reducing fertility rates, and improving children's health and nutrition; 3) Better child health and nutrition, together with higher maternal education, will have a multiplier effect on the quality of future generations; and 4) Having a significant role in breaking the cycle of poverty and inadequate education. An increase in the ratio of female's to male's life expectancy by 1% will result in a 355.605% increase in economic growth in West Java Province. This aligns with research by Ghojagh et al. (2023), which indicates a relationship between health and economic development. Muda et al. (2019) further elaborate that a region's health level positively affects its economy due to its impact on human resource quality, productivity, efficiency, and initiative. Higher life expectancy signifies improved opportunities and access for female to contribute to the economy.

On the other hand, the labor force participation rate (RLFP) has a negative effect on economic growth. A 1% increase in this ratio can reduce economic growth in West Java Province by -7.33%. This could be attributed to female's higher involvement in the informal sector, where their work often doesn't require specialized skills, resulting in lower incomes (Arora, 2012; Yuniashri et al., 2023). This capability also related to the percentage of females taken high school and higher education only up to 35.36% in 2022, which is about 6% lower than males' (BPS, 2024i). Moreover, women are far less productive than men in the workplace as their responsibility is to attend to the needs of families while continuing their employment (Camila, 2021; Morally, 2020). Productivity has a major role in determining employee output, which in turn impacts the female workers' income levels less than male.

According to Rahmawati & Hidayah (2020), an unbalanced LFP ratio, not complemented by government job provisions, can lead to unemployment, reducing productivity. Sitorus's (2016) research indicates that while Indonesia has made strides in reducing educational inequality between male and female, female workforce productivity and participation remain low. In addition to educational improvement and skill development, governments should enhance the enforcement of gender equality laws in the labor sector to protect women's rights and responsibilities (Subagja, 2023). Supportive workplace policies can be helpful solution, such as flexible hours to help women balance professional and personal responsibilities, equal parental leave for both men and women to prevent the caregiving burden from disproportionately falling on women, also provide on-site childcare facilities for working parents.

The RMYS variable exhibits the strongest correlation coefficient of 0.2849 with the REP variable **(Table 4)**. This correlation may stem from the fact that the average length of schooling in the West Java population is affectd by per capita income, which in turn affects per capita

expenditure (Wardhana et al., 2020). Conversely, the REP variable shows the highest correlation coefficient of 0.4431 with the RLE variable, demonstrating an inverse relationship. This could be attributed to the prevalence of mild health complaints related to chronic diseases, which are predominantly experienced by female in the Java region. Specifically, female in West Java report the highest incidence of health complaints (Ministry of Finance, 2022). The decreasing ratio of life expectancy between female and male may lead to an increase in the ratio of per capita expenditure. Additionally, the RLFP variable displays a strong correlation coefficient of 0.2593 with the RMYS variable. This can be attributed to the higher probability of female participation in the labor market in West Java, particularly among those with higher education levels, younger age, and divorced marital status (Khairunnisa, 2019).

Overall, irrespective of the specific relationships and affects of each variable, it is evident that gender equality significantly impacts the economic growth of the West Java Province. The findings suggest that gender-related factors may account for a 12.34% effect. Therefore, targeted interventions in gender development, encompassing education, health, and employment opportunities, by the government, particularly in the province of West Java, could yield positive effects on economic development in the region.

V. Conclusion

This study examine the extent to which gender equality, particularly focusing on female's access to education, healthcare, and employment, can affect regional economic growth. Through application of econometric analysis using the Common Effect Model (CEM) regression, the findings reveal that gender equality, when analyzed partially, has varied impacts on economic growth in West Java Province. Specifically, gender equality measured through variables such as the mean years of schooling and per capita expenditure in education and the economy leads to higher economic growth. Furthermore, gender equality in the health sector, as indicated by life expectancy, also contributes to economic growth in West Java Province, showing the most significant effect. However, the level of labor force participation shows an inverse relationship, where an increase in this ratio results in a decline in the province's economic growth, highlighting challenges in optimizing female's roles and productivity in the labor market.

Overall, the study reveals that gender equality development contributes 12.34% to regional economic growth, particularly in West Java Province. This highlights the positive impact of providing equal opportunities for female in fostering regional development. The findings from West Java, as one of Indonesia's most complex regions, suggest that efforts to

promote gender equality—particularly in education, healthcare, and economic sectors—can encourage regional economic growth, including in other regions of Indonesia with similar or different complexities.

These findings offer valuable insights and serve as a reflection for local and national governments, as well as related stakeholders, to prioritize gender equality in development initiatives. Such efforts should not only include the provision of opportunities, fulfillment of access, and development of infrastructure but also the formulation of policies and regulations that guarantee female's access to equal opportunities. Nevertheless, given certain limitations in this study, future research could further explore the driving factor variables of gender quality to the economic growth in the same area, hopefully other regions in Indonesia. In addition, it also extent to which regulations and policies are capable of promoting female's equitable access to opportunities and, consequently, increasing economic growth.

VI.   Bibliography

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