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IMPACT OF INCOME INEQUALITY ON THE ECONOMIC GROWTH IN MALTA

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Abstract:
Inequality of income is termed as the uneven sharing of income among group of people. The research aimed to probe the impact of inequality in income has on the economic growth of Malta. Secondary data were gathered from Eurostats, World Bank and OECD national account for a 13-year period annually (2006-2018). Ordinary Least Square (OLS) model was employed for the study. Dependent variable- GDP per capita, Independent variable- Gini coefficient and control variables- High Income Proportion, Low Income Proportion, Second Income Proportion, Third Income Proportion and Fourth Income Proportion all expressed by 20 percent of the population were used. The result revealed a negative impact of income inequality on the Malta's economic growth.

JEL: E01; E64; O11

Keywords: GDP per capita, Gini coefficient, income inequality

1. Introduction

Income inequality has been a major concerned for countries across the globe especially low- and middle-income countries, however, there is still much of concerned for high-income countries. According to Deininger and Squire (1997), impediment to rapid growth is as a result of uneven distribution of assets or income. Over the past years, many researchers (Azzoni, 2001; Le & Nguyen, 2019; Nwosa, 2019) have extensively examined the implication of income inequality on growth in developing countries but little have been done to examine similar relationship in developed economies (Alfranca & Galindo, 2003).

Economic growth is considered as a key indicator to assess the well-being of a society or region. As a matter of fact, a country is regarded as a developed or has potential of developing when its economic growth is consistently appreciating over time. In the

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economist's perspective, there is a clear positive link between the people's well-being and economic growth. Meaning, a country where its economic growth is consistently decreasing or falling there is an expected repercussion on the well-being of the people.

In Malta, there is limited research on the issue of income inequality. However, according to the research conducted by Georgakopoulos (2019) which explored the evolution of income and wealth inequality jointly over time. The researcher study revealed that Maltese households with tertiary education-experienced have a strong increase in their incomes and wealth. On the other hand, it tells that households with less education struggle with increment in income and since these households are disadvantaged. This establish there is income distribution as far Malta is concerned.

The paper aims to investigate the impact inequality in income has on economic growth in Malta. Unavailability of data and financial constraint were some of the limitations the researcher was face with. This paper is arranged into five sections, the first section is the introduction which primarily captures the motive of this paper. The second section; literature review, presents the various works researcher have conducted in relation to this research area. The third section exhibits the model specification, variables and analysis techniques adopted. The fourth section discusses the results obtained from the analysis. Finally, the five section summarizes and conclude this paper.

2. Literature Review

According to Rooth and Stenberg, (2011), income inequality between 70 to 90 percent stimulates regional growth. Their results were based on 72 labour regions in Sweden for a 16-year period. Partridge, (2005) study revealed that middle-class and overall income disparity have positive influence on long run growth. This was a study that was concentrated only on the U.S state. However, Amri and Nazamuddin, (2018) studied the long run effect on income inequality on growth. The researchers come out with a significant result, indicating negative relationship between growth and income inequality. Contrary, there was an insignificant short-run effect of income imbalances on economic growth. Fallah and Partridge, (2007) investigated the effect of income disparity on economic growth within US. Their results revealed a direct effect of income inequality on economic growth in the metropolitan areas. Furthermore, an inverse relationship was observed between income inequality and economic growth in the non-metropolitan areas.

A similar study was conducted by Le and Nguyen, (2019). The researchers studied the level of impact inequality of income have on economic growth at the provinces in Vietnam. Their outcome revealed an inverse correlation between income inequality and economic growth. Nwosa, (2019) explored the connection between inequality in income and economic growth and used Nigeria as a case study. The researcher used autoregressive distributed lag estimation technique to analyse data from 1981 to 2017. The outcome showed a strong correlation between income disparity and growth, but insignificant. Digdowiseiso, (2009) studied the determinants of income inequality, economic growth and further examined their relationship with reference to education

inequality in Indonesia. The result of the study revealed a positive association between economic growth and income inequality. A study by Azzoni, (2001) analysed the impact of income imbalances on the economic growth in Brazil from 1939 to 1995. It showed an oscillation movement of inequity in income over time.

3. Methodology

The researcher gathered secondary data from 2006 to 2018 in annual intervals (13-year period). The data were gathered from Eurostats, World Bank and OECD national account. The variables used for the study were Gross Domestic Product (GDP) per capita, Gini coefficient, High Income Proportion, Low Income Proportion, Second Income Proportion, Third Income Proportion and Fourth Income Proportion. The researcher employed the use of Ordinary Least Square (OLS) model for this study. Dependent variable used was GDP per capita, the main independent variable used was Gini coefficient and control variables: High Income Proportion, Low Income Proportion, Second Income Proportion, Third Income Proportion and Fourth Income Proportion. First and foremost, the researcher used descriptive statistics: maximum value, minimum value, standard deviation, correlation matrix, mean and standard deviation to describe the nature of the data. Durbin Watson and Breusch Pagan were tested to ascertain whether the assumptions underlying Ordinary Least Square were met and finally the Ordinary Least Square (OLS) model was fitted.

The model for the study:

GDP per capita = *f* (Gini coefficient, High Income Proportion, Low Income Proportion, Second Income Proportion, Third Income Proportion, Fourth Income Proportion)

$$Y_t = \alpha_o + \beta_1 GINI_t + \beta_2 I(H)_t + \beta_3 I(L)_t + \beta_4 I(2^{nd})_t + \beta_5 I(3^{rd})_t + \beta_6 I(4^{th})_t + \varepsilon_t$$

Where:

Y_t GDP per capita at time t,
$GINI_t$ Gini coefficient at time t,
$I(H)_t$ High Income Proportion at time t,
$I(L)_t$ Low Income Proportion at time t,
$I(2^{nd})_t$ Second Income Proportion at time t,
$I(3^{rd})_t$ Third Income Proportion at time t,
$I(4^{th})_t$ Fourth Income Proportion at time t,
ε_t Error at time t,
α_o intercept,
$\beta_{1..}\ \beta_6$ Coefficients to be estimated.

4. Data Analysis and Discussions

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP per Capita	13	23407	3478.864	19821	30098
Income by Highest	12	37.775	.4515122	36.7	38.6
Income by Lowest	12	8.475	.1288059	8.2	8.6
Income by Second	12	13.45833	.1443378	13.2	13.8
Income by Third	12	17.56667	.1497474	17.3	17.9
Income by Fourth	12	22.71667	.255248	22.5	23.1
Gini	13	29.08462	.4913353	28	30.2

Source: Compiled by author.

According to the above result, there were thirteen observations each for GDP per Capita and Gini coefficient. However, twelve observations were recorded for the rest of the variables: High Income Proportion, Low Income Proportion, Second Income Proportion, Third Income Proportion and Fourth Income Proportion. Furthermore, the result shows the various central tendency for each of the variables. GDP per capita recorded mean 23407 and standard deviation 3478.864. This implies there is high variability in GDP per capita with a wide range. Gini coefficient also recorded mean 29.08462 and standard deviation 0.491, minimum value 28 and maximum value 30.2 were also observed. These indicate that the variability in Gini coefficient is minimal. The other control variables: High Income Proportion, Low Income Proportion, Second Income Proportion, Third Income Proportion and Fourth Income Proportion, also recorded low variability.

Table 2: Correlation matrix

	GDP~Capita	Inc~High	Inc~Low	Inc~Second	Inc~Third	Inc~Fourth	Gini
GDP per Capita	1.0000						
Income by Highest	0.3787	1.0000					
Income by Lowest	0.4050	-0.4474	1.0000				
Income by Second	-0.2184	-0.7847	0.6752	1.0000			
Income by Third	-0.2786	-0.8732	0.3328	0.7704	1.0000		
Income by Fourth	-0.6183	-0.6119	-0.2902	0.0424	0.3946	1.0000	
Gini	0.1418	0.9232	-0.7248	-0.9013	-0.8085	-0.3050	1.0000

Source: Compiled by author.

The above result reveals the correlation coefficients for each set of the variables. Fourth Income Proportion showed a moderate negative linear relationship (-0.3>-0.6183>-0.7) with GDP per capital whereas both High Income Proportion and Low-Income Proportion established positive linear relationship with GDP per capita (0.3<0.3787, 0.4050<0.7) respectively. The other remaining variables: Second Income Proportion, Third Income Proportion and Gini coefficient, recorded a weak form of linear relationship with GDP per capita (-0.3<-0.2184, -0.2786, 0.1418< 0.3). However, High Income Proportion, Low Income Proportion and Third Income Proportion were dropped since there were high correlation, in order to observe the assumption no multicollinearity which underlies Ordinary Least Square model.

Table 3: Breusch-Pagan test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: ginilog incomesec20perlog incomefourth20perlog
F(3 , 8) = 0.37
Prob > F = 0.7745

Source: Compiled by author.

The Breusch-Pagan test was conducted to check heteroskedasticity, that is constant variance. The result revealed the existence of heteroskedasticity (p-value= 0.7745>0.05) since the null hypothesis failed to be rejected. However, this was corrected in the final model.

Table 4: Durbin Watson test

Durbin's alternative test for autocorrelation			
lags(p)	**chi2**	**Df**	**Prob > chi2**
1	0.684	1	0.4081
H0: no serial correlation			

Source: Compiled by author.

The Durbin Watson test was also used to check for serial correlation. A p-value of 0.4081 recorded showed that there was no autocorrelation, since the null hypothesis failed to be rejected (0.4081>0.05).

Table 5: Ordinary Least Square model

Linear regression				Number of obs = 12		
				F(3, 8) = 13.78		
				Prob > F = 0.0016		
				R-squared = 0.8269		
				Root MSE = .06033		
Robust						
GDPperCapitalog	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Ginilog	-13.49342	2.647839	-5.10	0.001	-19.59935	-7.387498
IncomebySecondlog	-21.50597	4.164623	-5.16	0.001	-31.1096	-11.90233
IncomebyFourthlog	-12.25917	2.049751	-5.98	0.000	-16.9859	-7.532431
cons_	149.7098	23.99199	6.24	0.000	94.38416	205.0354

Source: Compiled by author.

According to the result above, the over p- value (0.0016<0.05) exhibits the significant of the model, hence, the Ordinary Least Square model was efficient and reliable for the study. The R-squared value of 0.8269 also showed that the model was able to produce robust estimates, that is, the variability in the dependent variable: Gross Domestic Product per Capita was explained in percentage of 82 by the independent variables; Gini coefficients, Income held by second 20 percent and Income held by fourth 20 percent. The

result further showed that all the independent variables used in this model were significant (p-value<0.05).

A negative relationship was established between Gini coefficient and GDP per capital which is consistence with previous studies (Amri & Nazamuddin, 2018; Le & Nguyen, 2019).

Similarly, negative relationships were also observed between Second Income Proportion and GDP per capita; Fourth Income Proportion and GDP per capital.

5. Conclusion

The study aims to investigate the impact of income inequality on economic growth in Malta. The researcher used a descriptive analysis to explore the nature of the data. Breusch-Pagan test and Durbin-Watson test were conducted to check heteroskedasticity and autocorrelation respectively. The result of the Breusch-Pagan test showed an element of heteroskedasticity; however, it was corrected in the final model. Lastly, the Ordinary Least Square (OLS) was employed to fit the model. In conclusion, income inequality has a negative significant impact on economic growth in Malta.

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