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**Research Article**

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# The Influence of Informal Economy, Corruption, and Economic Freedom on Tax Revenue (Case Study: 35 World Countries, Period 2000-2020)

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**Abstract:** *A nation's economy now plays a significant role in its overall growth. A dependable source of money is necessary for the nation to have a robust and stable economy, and tax revenue is one of the most popular sources. This study tries to ascertain how much a nation may optimize its tax income and how far it can go past the issue of moral hazard behavior, which has the potential to destabilize the economy. Tax revenue, the informal economy, the corruption perception index, and economic freedom are the variables that were employed in this study. The regression model employed in this study is the Fixed Effect Model. The findings show that economic freedom and the informal economy have a negative and significant impact on tax revenue, while the corruption perception index variable has a positive and significant impact.*

**Keywords***: Corruption, Corruption Perception Index, Economic Freedom, Informal Economy, Shadow Economy, Tax Revenue.*

## Introduction

The success of a country's development relies heavily on its economic sector, which requires a stable and planned economy. A stable and reliable financial source is crucial for achieving development goals. Countries utilize various methods to generate income, including taxation, investment, corporate activities, fines, levies, grants, and seizure of assets for public interest. However, tax revenue is generally the primary source of income for many countries. Despite differences in taxation policies, the ultimate goal for all countries is to improve the well-being of their citizens. However, there are obstacles to achieving this goal, such as the problem of moral hazard. Moral hazard refers to actions where one party takes risks that harm others, without bearing the associated costs or risks. In the economic field, examples of moral hazard include the shadow economy, informal economy, and corruption. These behaviors hinder a country's progress and development.

Shadow economy (Samuda, 2016; Schneider & Enste, 2000) with various other terminologies, namely unofficial economy, underground economy, informal economy, and black economy, namely all types of economic activities carried out both legally and illegally that are not counted (missed) from the calculation of Gross Domestic Product (GDP). shadow economy and informal economy are important because the measurement of economic performance that has been measured through GDP will be biased or underestimated. The same thing is also conveyed by (Baklouti & Boujelbene, 2020), namely the informal economy can have a negative impact on the country's economy where the increasing economic activity in the informal sectors can have an impact on reducing state tax revenues, so that it can further cause a negative impact on investment in public infrastructure and reduce the efficiency of public services.

Quoted from (Faal, 2003), some of the reasons why someone engages in informal economic activities are: 1) Avoiding taxes. 2) Avoiding the payment of social protection contributions. 3) Avoiding set standards, such as wage setting, maximum working time, and safety standards. 4) Avoiding approval of established administrative procedures.

Although it seems bad, shadow economy or informal economy activities according to (Zaman & Goschin, 2015) can only have a positive impact, such as one of them as an alternative solution to the problem of unemployment. Basically, unemployment occurs because there is an excess supply of labor while in terms of labor demand in the official economy sector the number is limited, so to overcome this some people look for other ways, namely by working in the unofficial economy sector such as street artists, household assistants, gardeners, scavengers, and so on. (Schneider & Enste, 2000) also said that shadow economy activities in some countries can have a positive impact on economic growth due to the income earned from shadow economy activities is actually reused and allocated to the official economy sectors so that this can encourage and accelerate economic growth in the formal sector.

Besides the informal economy, another activity that can damage and hamper the economy is corruption. According to Transparency International, corruption is the abuse of power for personal gain. The majority of these personal gains are obtained from businessmen, especially in order to avoid taxes or regulations so that they can more easily win contracts or other personal goals (Borlea et al., 2017). Corruption has consequences that can reduce the level of investment, reduce the productivity of public spending, distort the allocation of resources and ultimately lead to inhibition of economic growth (Dreher & Herzfeld, 2005; Mauro, 1995; Susan & Ackerman, 1996). Corruption can also lead to lower efficiency and ultimately impede a country's development. The argument is based on the deliberate actions taken by public officials in providing slow services to the public in order to obtain more bribes (Busch Review & Busch, 1968). In fact, according to the International Monetary Fund (2016) cited from (Lutfi et al., 2020) estimates that more than US $ 1.5 - 2 trillion or about 2% of the world's total Gross Domestic Product (GDP) is lost annually due to corruption and bribery.

Although corruption has a negative impact, especially on the growth and development of an economic system, on the other hand, there are several previous studies that have found positive impacts of corruption that may not be realized. According to (Lien, 1986; Maher, 1986) corruption can indirectly induce more efficient provision of government services. (Leff, 1964; Leys, 1965) also suggests that corruption has a positive impact on economic growth by minimizing barriers from administrative procedures so that when viewed from this perspective corruption is likened to a lubricant that smooths operations especially for a paradigm of bureaucracy and therefore can create economic efficiency by reducing barriers as previously described which results in reducing barriers to investment and economic growth.

Besides being influenced by the informal economy and corruption, a country's economy is also influenced by economic freedom. Economic freedom has long been emphasized by Adam Smith through the concept of invisible hand where freedom will create wider economic opportunities, especially for economic actors. A country with a higher level of economic freedom is likely to produce better economic welfare, which in turn will have an impact on higher economic growth (Alabede, 2018). (Acikgoz et al., 2016; Compton et al, 2014) also argue that giving more freedom to the economy in a country will have a positive and significant impact on the economy in that country both in terms of fiscal and per capita income. However, this positive impact does not always occur in every country, as stated by (Sokolovska, 2016) some countries with the category of poor and developing countries actually have a negative correlation, where these countries tend to maintain high tax rates, especially for international trade and regulations that are still quite strict due to an underdeveloped tax system, so they are unable to encourage efficiency and eliminate tariff barriers.

## Method

### Type and Source of Data

The type of data used in this study is secondary data in the form of panel data, namely a combination of time series and cross data. The data used in this study comes from annual reports issued by the World Bank, Transparency International, and The Haritage Foundation.

### Population and Sample

The time span used in this study is from 2000 to 2020. The reason behind the selection of the research year range is because this period covers the last two decades and is an important period in modern history, especially those related to the 21st century global economy such as the global financial crisis to the pandemic covid-19. While the focus of this research object is countries around the world.

### Research Model

This study uses an econometric model in the form of multiple linear regression. with 1 dependent variable and 3 independent variables. the general equation is as follows:

$$Y_{it} = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \mu_{it}$$

then the general equation above is transformed into a panel data model as follows :

$$TAX_{it} = \beta_0 + \beta_1 IE_{it} + \beta_2 CPI_{it} + \beta_3 EF_{it} + \mu_{it}$$

Description:

TAX = Tax Revenue (Percent of GDP)
IE = *Informal Economy* (Percent of GDP)
CPI = Corruption Perception Index (0 – 100)
EF = Economic Freedom (0 – 100)
$\beta_0$ = Constanta
$\beta_{1-3}$ = Regression Coefficient
$e$ = Error Term
i = (1,2,3,...,n) cross section data
t = (1,2,3,...,n) time series data

### Data Analysis Methods

In the analysis of panel data models, three types of estimation approaches are known, namely the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM). The CEM approach is to estimate the model using the Ordinary Least Square method so that it can be called a least squares approach by ignoring differences in the dimensions of time or place so that each country is assumed to have a similar situation either between countries or years. The FEM approach takes into account the possibility that the research will face the problem of omitted variables where omitted variables may bring changes to the intercept time series or cross section. This model adds dummy variables to allow for changes in the intercept. The REM approach improves the efficiency of the least squares process by taking into account the errors from the cross section and time series.

There are three tests used in the analysis of panel data methods to select the right model, namely the Chow Test, Hausman Test and Lagrange Multiplier Test. The Chow test is used to choose between the best CEM or FEM. The Hausman test is used to choose between the best FEM or REM. The Lagrange Multiplier test is used to choose between the best REM or CEM. If the selected data model is CEM or FEM, classical assumption tests will be carried out including Residual Normality Test, Heteroscedasticity Test, Autocorrelation Test, and Multicollinearity Detection. Meanwhile, to check the regression equation in panel data, Simultaneous Test (F Test) and Partial Test (t Test) are needed.

## Results and Discussion

### Descriptive Statistical Analysis Results

After sampling all data sources from a population of 195 countries in the world, the results show that 35 countries fall into the category of countries in the world, the results obtained as many as 35 countries fall into the predetermined sample category, namely as follows sample category that has been determined, which is as follows.

**Table 1** List of Countries in The Sample

| No. | Nama | Kode ISO | No. | Nama | Kode ISO |
|---|---|---|---|---|---|
| 1 | Argentina | ARG | 19 | Lithuania | LTU |
| 2 | Australia | AUS | 20 | Luxembourg | LUX |
| 3 | Austria | AUT | 21 | Malaysia | MYS |
| 4 | Belgium | BEL | 22 | Norway | NOR |
| 5 | Bulgaria | BGR | 23 | Peru | PER |
| 6 | Canada | CAN | 24 | Philippines | PHL |
| 7 | Chile | CHL | 25 | Poland | POL |
| 8 | Costa Rica | CRI | 26 | Portugal | PRT |
| 9 | Croatia | HRV | 27 | Romania | ROU |
| 10 | El Salvador | SLV | 28 | Singapore | SGP |
| 11 | Estonia | EST | 29 | Slovak Republic | SVK |
| 12 | Finland | FIN | 30 | Slovenia | SVN |
| 13 | France | FRA | 31 | Sweden | SWE |
| 14 | Germany | DEU | 32 | Switzerland | CHE |
| 15 | Hungary | HUN | 33 | Thailand | THA |
| 16 | Israel | ISR | 34 | United Kingdom | GBR |
| 17 | Italy | ITA | 35 | United States | USA |
| 18 | Latvia | LVA | | | |

In the 35 samples obtained, it is known that the total observation data in this study is 735. The tax revenue variable has an average value of 18.65% of total GDP, with the highest value coming from Sweden in 2000 at 29.9%, and the lowest coming from the United States in 2009 at 7.9%. Furthermore, the informal economy variable has an average value of 24.08% of total GDP with the highest value coming from Peru in 2000 at 59.9% and the lowest value in the United States in 2018 and 2019 at 8.1%. Then for the corruption perception index variable, the average index value is 61.62 with the highest value

owned by Finland in 2000, namely with 100 index points and the lowest value owned by the Philippines in 2008 with a value of 23 points. Finally, the economic freedom variable has an average index of 69.01 points, while the highest and lowest values are 89.4% and 43.8%, respectively. where Singapore for 4 years (2014, 2015, 2019, and 2020) always recorded the highest value and Bulgaria in 2016. highest value and Bulgaria in 2016 recorded the lowest value of 43.8 points.

**Selection of Panel Data Regression Models**

**1. Chow Test**

**Table 2** Chow Test Results

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 356.608883 | (34,697) | 0.0000 |
| Cross-section Chi-square | 2140.400170 | 34 | 0.0000 |

Source: Data Processed Using Eviews 13.

Based on the test results, it is known that the Cross-section Chi-square probability value of the FEM model is 0, which means that the value is smaller than the predetermined error value of 0.05, which means that the FEM model is more suitable than REM.

**2. Hausman Test**

**Table 3** Chow Test Results

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 15.630248 | 3 | 0.0014 |

Source: Data Processed Using Eviews 13.

Based on the Hausman test results, it is known that the cross-section random probability value of the REM model is 0.0014, which means that the value is smaller than the specified error rate of 0.05. This shows that the FEM model is still the best.

**Panel Data Regression Estimation Results**

**Table 4** Chow Test Results

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 38.24292 | 1.875062 | 20.39555 | 0.0000 |
| IE | -0.371935 | 0.049951 | -7.445961 | 0.0000 |
| CPI | 0.020107 | 0.009799 | 2.051958 | 0.0405 |
| EF | -0.171999 | 0.013888 | -12.38494 | 0.0000 |

*R-Squared* = 0,956929 *F-Statistic* = 418,5298

Source: Data Processed Using Eviews 13.

After selecting the best model, it is known that the Fixed Effect Model (FEM) is the best model that can be used to estimate the data in this study. Based on the regression results above, the following equation is obtained.

$$TAX_{it} = 38{,}24292 - 0{,}371935\ IE_{it} + 0{,}020107\ CPI_{it} - 0{,}171999\ EF_{it}$$

The regression estimation results show that the R2 value is 0.956929, which means that all independent variables in this study, namely the shadow economy, corruption, and economic freedom, have an influence of 95.69% on the dependent variable, namely tax revenue, while the remaining 4.31% is influenced by other variables not included in the research model. The constanta value in the regression results is 38.24292, which means that if it is assumed that all independent variables are worth 0, the value of the tax revenue variable is 38%. More details regarding the interpretation of each variable are explained as follows.

The informal economy variable has a negative and significant effect on tax revenue with a coefficient value of -0.371935 at α = 5%. This indicates that if there is a 1% increase in informal economic activity, it will reduce the level of tax revenue by 0.372% assuming ceteris paribus. Next, the corruption perception index variable has a positive and significant effect on tax revenue with a coefficient value of 0.020107 at α = 5%. which means that every 1% increase in the value of the corruption perception index will reduce the level of tax revenue by 0.02% with the assumption of ceteris paribus. The last is the economic freedom variable has a negative and significant effect on tax revenue with a coefficient value of -0.171999 at α = 5%. which means that every 1% increase in the value of the economic freedom index will reduce the level of tax revenue by 0.172% with the assumption of ceteris paribus.

Based on the partial test results, all variables are stated to have a significant influence on the dependent variable. This is indicated by a probability value that is less than the alpha value (0.05). The IE and EF variables have a negative and significant effect, while the CPI variable has a positive and significant effect. Likewise, based on the results of the F test, where the F-Statistic value is smaller than the table value of 2.617, then the adjusted R-Squared value of 0.957 indicates that the accuracy of the variables used in this study is 95.7% and the rest is influenced by variables outside this study, so that based on these results it can be concluded that all independent variables have a significant effect on the dependent variable.

**Discussion of Research Findings**

Based on the results of the study, it is known that the informal economy (IE) has a negative and significant effect on tax revenue. This is in line with what was stated by (Azwar & Mulyawan, 2017) that there is at least 1.9% of potential tax on GDP that is lost due to underground economic activities. (Lukito et al., 2023) also said that informal economic activities have a significant impact and negative influence on tax revenue. As for why informal economic activities can occur in a country due to the inability to fulfill the labor supply in the formal economic sector so that they (people) look for other alternatives, namely working in the informal sector (Zaman & Goschin, 2015). Apart from the limitations of the formal economy, (Faal, 2003) said that one of the reasons why a person carries out hidden economic activities is to avoid taxation.

Then the corruption perception index (CPI) variable is known to have a positive and significant effect on tax revenue. This indicates that the higher the index in a country, it reflects public awareness, especially stakeholders, of the dangers of corruption, so that government in a country will become more transparent

and accountable, especially with regard to tax revenue and management. (Jahnke, 2017) explains that public trust is closely related to their willingness to pay taxes, the slightest action, especially corruption among stakeholders, will greatly affect public trust and willingness to the tax department. In addition to reducing public confidence in tax compliance, acts of corruption can also have an impact on investment levels, reduce the productivity of public spending, distort the allocation of resources and ultimately have an impact on inhibiting economic growth (Dreher & Herzfeld, 2005; Mauro, 1995; Susan & Ackerman, 1996).

Last, the variable of economic freedom has a negative and significant effect on tax revenue. This concept is often associated with free market capitalism and is believed to promote economic growth and prosperity. However, there is a debate on the relationship between economic freedom and tax revenue. Some studies show that economic freedom can have a negative impact on tax revenue in a country. As quoted from (Sokolovska, 2016) said countries with the category of poor and developing countries actually have a negative correlation with tax revenue, where these countries tend to maintain high tax rates, especially for international trade and regulations that are still quite strict due to an underdeveloped tax system, so they are unable to encourage efficiency and eliminate tariff barriers. (Naape, 2021) also corroborates that economic freedom can have a negative effect, especially for tax revenues, especially in countries that depend on the agricultural sector. Another reason why economic freedom can have a negative impact on tax revenue as quoted from (Yuliawati & Sutrisno, 2021) is because economic freedom that is uncontrolled and not given restrictions or regulations by the government can allow individuals and businesses to avoid their tax obligations.

## Conclusion

The results of the panel data regression method analysis show that the informal economy, corruption, and economic freedom have a significant effect on tax revenues. where the informal economy and economic freedom both have a negative effect, indicating that an economy that is too free and unsupervised and unable to meet labor supply in the formal sector can potentially lead to actions that can reduce tax revenues in a country, especially in the form of tax avoidance behavior or the overflow of labor in the informal sector that is difficult to monitor by the government.

Meanwhile, the corruption perception index has a positive effect, which indicates that the more aware and concerned the government or stakeholders in a country are not to commit corruption, the public and investor confidence will also increase, which will have an impact on tax revenues that can be maximized because taxpayers feel that their tax money is well managed and not misused for personal or group interests only.

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