

## Does FDI Affect Exports in Cambodia? Study with ARDL Approach

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### Abstract

This study looks at how factors including exports, FDI, inflation, and GDP in Cambodia relate over the long and short terms. We use the World Bank as a supplementary source for statistics data, namely data from 2000 to 2020. We find that the variables we estimate have a varied relationship with exports in Cambodia, in the short term foreign direct investment is the dominant factor influencing exports, followed by inflation. The ARDL test found that when foreign direct investment increases, it will give a negative sentiment towards an increase in exports in Cambodia; in line with this, the economic growth variable is also the same. This is different from other variables, such as inflation, where when there is an increase it will make a positive contribution to the increase in exports. This shows that in Cambodia foreign direct investment remains the dominant factor for exports, but in the short term has a negative sentiment, different in the long term.

**Keyword :** Export, Foreign Direct Investment, Inflation, Gross Domestic Product, Cambodia.

**JEL Classification :** C31, I25, O40.

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### Background

Cambodia's reliance on international commerce as the engine of the country's economy is relatively high (Kiyoyasu, 2017). International trade is the right way to improve the welfare of the people of a country because not all countries have production factors such as natural resources, human resources and production equipment or technology that are sufficient both in terms of quality or quantity in an effort to meet community needs (Carroll & Neumann, 2022 ; Sasongko, Bawono, & Prabowo, 2021).

Export is one component of international trade. The occurrence of exports is caused by differences in the characteristics of a country. From this activity, it is felt that there are benefits from trade or gains from trade (Kacou, Kassouri, Evrard, & Altuntaş, 2022 ; Harnani, Prabowo, Alim, & Wulandari, 2022). International trade occurs because of different production factors causing price differences. Besides that, there are many other benefits of international trade (Tarakçı, Ölmez, & Durusu-Çiftçi, 2022 ; Widarni, Drean, & Bawono, 2022).

According to Song & Lee (2022), the activity of capital flows, both in and out of a country, is one of the economic activities that cannot be isolated from international commerce. Due to variations in costs in the international trade process, it is probable that production elements will be transferred from the exporting country to the importing country when international trade activities take the form of export and import activities. According to Sahoo & Dash (2022),

exports and foreign direct investment have a negative or opposing connection because if exports rise, FDI will be negatively impacted and would therefore decline.

Fundamentally, it is anticipated that FDI would be able to boost a nation's productivity, which will then have an influence on rising national revenue in the form of GDP and rising exports. In other words, investment is a must if you want to increase the performance of international trade (Halaszovich & Kinra, 2020; Rusminingsih & Damayanti, 2022).

In addition, industrial sector development and infrastructure development are also needed to encourage the competitiveness of national production (Uddin, Ali, & Masih, 2020; Sulisnaningrum, 2021; Purwantini, 2017). When the performance of international commerce, the industrial sector, and infrastructure development will improve in Cambodia, it which ultimately boosts the country's competitiveness and draw in more foreign capital. Investors may be particularly drawn to the industrial sector, which is accessible to international investment (Götz & Jankowska, 2022).

The large or small factor of incoming FDI is highly dependent on the inflation rate. This statement is in accordance with the opinion of Magazzino & Mele (2022) regarding inflation which is a tax on the balance held by the public. The higher the tax, the more people will avoid it (Efuntade & Akinola, 2020; Alim, Setiyantono, & Zakiah, 2021). In addition, inflation will raise interest rates, so an increase in interest rates will reduce the expected level of FDI. In the case of exports, inflation also has an impact on exports (Jalali-Naini & Naderian, 2020). According to Civcir, Panshak, & Ozdeser (2021), inflation can cause problems in the balance of payments. This means that inflation can interfere with export performance. In addition, inflation makes the price of domestic goods more expensive and makes countries import goods in order to lower prices. For exporting companies, the goods produced are not competitive because the prices are getting more expensive. This study looks at how factors including exports, FDI, inflation, and GDP in Cambodia relate over the long and short terms.

**Research Methods**

We use the World Bank as an additional source for statistical data, namely data from 2000 to 2020. Two alternative time series models will be used to investigate the ensuing variables. In this study, economic growth is measured using national GDP. The factors in this study include FDI, inflation, and GDP because they show the long- and short-term relationships between the three variables, with export as the dependent variable. Here's the econometric model we use:

$$EX_t = \beta_0 + \beta_1 EX_{t-1} + \beta_2 EX_{t-2} + \beta_3 EX_{t-3} + \beta_5 EX_{t-4} + \beta_6 FDI_t + \beta_7 INF_t + \beta_8 INF_{t-1} + \beta_9 INF_{t-2} + \beta_9 GDP_t + e_t$$

Where the export is EX, FDI is foreign direct investment, inflation is INF, GDP is gross domestic product, the error term is e, and time series is t. Dynamic ARDL was used in the study. Zhang et al. (2021) claim that ARDL is a regression method that includes the lag of both the dependent and independent variables simultaneously. Using this model can analyze long-term relationships when the explanatory variables are a mixture of 1(1) and 1(0).

**Table 1.** Descriptive variable

| Variable | Explanation   | Data type |
|----------|---|-----------|
| Export   | Export value, which is presented as an average percentage for the base period, or using the year 2000, is the current export value or free on | Index     |

|           |  |         |
|-----------|--|---------|
|           | board converted to US dollars.   |         |
| FDI       | The net inflow of funds utilized to acquire long-term management ownership is referred to as FDI. this happens in a business that operates outside the investor's home nation. | Percent |
| Inflation | Inflation is a tendency to increase the price of goods and services in general which takes place continuously.   | percent |
| GDP       | GDP calculates the total market value of all the goods and services a country produced within a certain time frame.  | Percent |

**Result and Discussion**

Based on the factors of the study, descriptive data are shown in Table 1.

**Table 2.** Descriptive data

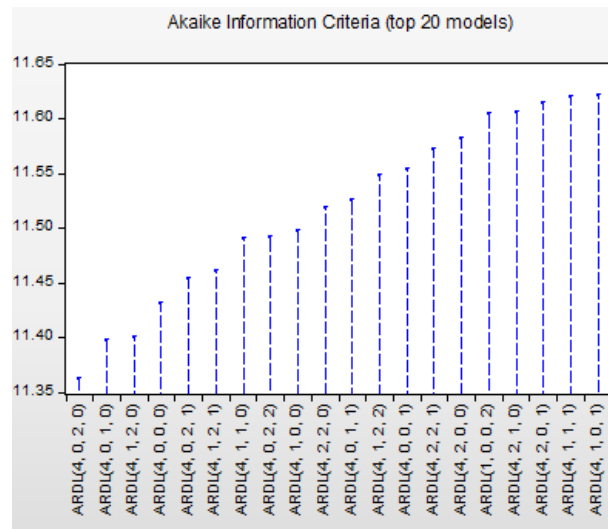
|              | FDI      | INF      | GDP       | EX       |
|--------------|----------|----------|-----------|----------|
| Mean         | 3.709415 | 4.883040 | 7.226089  | 255.4301 |
| Median       | 4.054763 | 4.312141 | 7.142571  | 251.8763 |
| Maximum      | 7.028893 | 9.222571 | 13.25009  | 460.9659 |
| Minimum      | 1.817908 | 2.018098 | -3.096007 | 91.31891 |
| Std. Dev.    | 1.195764 | 2.046807 | 3.448108  | 119.2237 |
| Skewness     | 0.630598 | 0.457522 | -1.402324 | 0.231252 |
| Kurtosis     | 3.945786 | 2.182375 | 5.817277  | 2.091333 |
|              |          |          |           |          |
| Jarque-Bera  | 2.174484 | 1.317588 | 13.82771  | 0.909637 |
| Probability  | 0.337145 | 0.517475 | 0.000994  | 0.634563 |
|              |          |          |           |          |
| Sum          | 77.89771 | 102.5438 | 151.7479  | 5364.031 |
| Sum Sq. Dev. | 28.59703 | 83.78841 | 237.7890  | 284285.9 |
|              |          |          |           |          |
| Observations | 21       | 21       | 21        | 21       |

Mean, min, max, and standard deviation are used to express the findings of descriptive statistics. EX Minimum 91.31, EX Maximum 490.96, and EX Standard Deviation 119.22. FDI Minimum 1.81, FDI Maximum 7.02, FDI Standard Deviation 1.19, etc. The ARDL model should not be used to forecast the value without first performing a stationary test. By looking at the error component, which also incorporates any possibility for autocorrelation, the ADF algorithm may determine if a series is stationary or not. The results are as follows:

**Table 3. Unit Root Test**

|                                 | Unit Root   | ADF Test stat. | Signif. | Be told   |
|---------------------------------|-------------|----------------|---------|-----------|
| Gross Domestic Product (GDP)    | Level       | -1.431593      | 0.5451  |           |
|                                 | First Diff  | -3.051408      | 0.0490  | Stationer |
| Inflation (INF)                 | Level       | -2.477154      | 0.1354  |           |
|                                 | First Diff  | -4.777555      | 0.0015  | Stationer |
| Foreign Direct Investment (FDI) | Level       | -7.791961      | 0.0000  | Stationer |
| Export (EX)                     | Level       | -1.935355      | 0.3103  |           |
|                                 | First Diff  | -2.670498      | 0.0973  |           |
|                                 | Second Diff | -3.711687      | 0.0158  | Stationer |

From the table above, it can be concluded that FDI data are stationary in the level data, GDP and INF data are stationary in the first difference data, while EX data are stationary in the second difference. We may continue with the ARDL estimate because all the data are stationer.



**Figure 1. AIC Optimum Lag Test**

In order to determine which lag should be utilized in the subsequent test, optimal lag testing is conducted; as can be seen in the figure above, 4,0,2,0 lag is the most recommended.

**Table 4. Bounds test**

| Stat. Test  | Value    | Signif. | I(0) | I(1) |
|-------------|----------|---------|------|------|
| F-statistic | 2.921631 | 10%     | 2.37 | 3.2  |
| k           | 3        | 5%      | 2.79 | 3.67 |
|             |          | 2.5%    | 3.15 | 4.08 |
|             |          | 1%      | 3.65 | 4.66 |

Asymptotic : n=1000

According to Table 4's findings of the Limit test. This shows that the four variables under study— export, foreign direct investment, inflation, and economic growth—are cointegrated throughout time or move in the same direction because the F statistic value is greater than I(0) and I(1).

**Table 5.** ARDL results

|            | Coef.     | Std. Error | t-Stat.   | Prob.* |
|------------|-----------|------------|-----------|--------|
| D(EX(-1))  | 0.330536  | 0.562746   | 0.587362  | 0.5825 |
| D(EX(-2))  | -0.856072 | 0.432688   | -1.978499 | 0.1048 |
| D(EX(-3))  | 0.119462  | 0.584543   | 0.204368  | 0.8461 |
| D(EX(-4))  | -1.004523 | 0.504070   | -1.992825 | 0.1029 |
| FDI        | -65.93726 | 60.25370   | -1.094327 | 0.3237 |
| D(INF)     | 28.26450  | 27.21590   | 1.038529  | 0.3466 |
| D(INF(-1)) | -9.575827 | 19.48419   | -0.491466 | 0.6439 |
| D(INF(-2)) | 18.72572  | 19.49242   | 0.960667  | 0.3808 |
| D(GDP)     | -2.211445 | 8.219227   | -0.269058 | 0.7986 |
| C          | 259.5512  | 246.7188   | 1.052012  | 0.3410 |
| R-squared  | 0.730354  |            |           |        |

The ARDL model's R-squared value is 0.73, which means that each of its independent variables— foreign direct investment, inflation, and economic growth—can account for 73% of the variance in the dependent variable, export. This demonstrates how well the research paradigm works for research. Judging from the ARDL estimation results, because the EX and EX (-1) variables show a t-statistic of 0.587362 which is greater than the coefficient of 0.330536, this means that the export factor of the previous year is a factor that affects current exports. For example, when the export rate in the previous year increased by 1%, it would result in an increase in exports this year by 33 percent. This shows that in Cambodia the influence of exports in previous years is one of the strong factors affecting exports this year. Other variables such as inflation have an inverse relationship with exports, while foreign direct investment and economic growth have a direct relationship with exports in Cambodia. However, other variables, such as consumption of renewable energy, have a positive contribution to reducing CO2 emissions in Cambodia.

**Table 6.** model test results in the long and short term

|               | Coef.     | Std. Error | t-Stat.   | Prob.  |
|---------------|-----------|------------|-----------|--------|
| C             | 259.5512  | 246.7188   | 1.052012  | 0.3410 |
| D(EX(-1), 2)* | -2.410598 | 1.614959   | -1.492668 | 0.1957 |
| FDI**         | -65.93726 | 60.25370   | -1.094327 | 0.3237 |

|               |           |          |           |        |
|---------------|-----------|----------|-----------|--------|
| D(INF(-1))    | 37.41440  | 56.99393 | 0.656463  | 0.5405 |
| D(GDP)**      | -2.211445 | 8.219227 | -0.269058 | 0.7986 |
| D(EX(-1), 3)  | 1.741133  | 1.256221 | 1.386009  | 0.2244 |
| D(EX(-2), 3)  | 0.885061  | 0.882503 | 1.002899  | 0.3619 |
| D(EX(-3), 3)  | 1.004523  | 0.504070 | 1.992825  | 0.1029 |
| D(INF, 2)     | 28.26450  | 27.21590 | 1.038529  | 0.3466 |
| D(INF(-1), 2) | -18.72572 | 19.49242 | -0.960667 | 0.3808 |

In order to be able to conduct an economic analysis of the influence of foreign direct investment, economic growth, and inflation on exports, it is not enough just to be based on short-term information, and it is necessary to analyze their effect in the long term. From the long-term ARDL estimate findings, as shown in Table 5, it can be seen that the FDI variable has the largest coefficient of -65,93726. Then followed by inflation has a coefficient value of 37.4140. This means that in the long run, the FDI variable plays more of a role in increasing exports, followed by the inflation variable.

## Conclusion

We find that the variables we estimate have a varied relationship with exports in Cambodia, in the short term foreign direct investment is the dominant factor influencing exports, followed by inflation. The ARDL test found that when foreign direct investment increases, it will give a negative sentiment towards an increase in exports in Cambodia; in line with this, the economic growth variable is also the same. This is different from other variables, such as inflation, where when there is an increase it will make a positive contribution to the increase in exports. This shows that in Cambodia foreign direct investment remains the dominant factor for exports, but in the short term has a negative sentiment, different in the long term.

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