

Секция «9. Количественные методы и информационные технологии в финансах и экономике»

Применение экономической модели для анализа экономики Австралии Егоров Алексей Александрович

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Introduction

In my creative research I am going to build an econometric model that concerns Investments and find how a number of factors affect it. I have chosen Australia as a country under the consideration, because Australia's economy is one of the major capitalist economies in the world with a GDP of \$ 1.57 trillion.

Investment has different meanings in finance and economics.

In economics, investment is the accumulation of newly produced physical entities, such as factories, machinery, houses, and goods inventories.

In finance, investment is putting money into an asset with the expectation of capital appreciation, dividends, and/or interest earnings. This may or may not be backed by research and analysis. Most or all forms of investment involve some form of risk, such as investment in equities, property, and even fixed interest securities which are subject, among other things, to inflation risk.

In Australia such organization as FIRB can help you with investments. The Foreign Investment Review Board (FIRB) is a non-statutory body that advises the Government on foreign investment policy and its administration. The Board examines proposals by foreign interests to undertake direct investment in Australia and makes recommendations to the Government on whether those proposals are suitable for approval under the Government's policy.

Determination of variables

I collected data from the Australian bureau of statistics site:
<http://www.abs.gov.au/ausstats/abs@.nsf/mf/6401.0>

We have two types of variables : endogenous and exogenous, they are endogenous variable (I) an internal variable of a model in my model is Investments.

Exogenous variables (V) external variables of my model variable :

Income (V): is the consumption and savings opportunity gained by an entity within a specified timeframe, which is generally expressed in monetary terms.

Econometric model.

Where:

I – Investment (\$bill)

V – Income (\$bill)

Correlation analysis.

The correlation coefficients between the variables were calculated by using the Data Analysis function.

Формула «III MMΦΦ»

$$V(t) I(t)$$

$$V(t) 1$$

$$I(t) 0,982 1$$

From the coefficients we can conclude that there is Strong Positive linear relationship between Investment and Income.

Specification of estimated model

$$(37,433) (12,954) (0,921)$$

$$4E(\epsilon_t) = 0$$

$$\sigma(\epsilon_t) = const.$$

$$R^2=0,696; Fstat.=59,434; Fcr.=4,225.$$

Goldfeld-Quandt test

Next step is Goldfeld-Quandt test that checks the estimated model for homoscedasticity.

$$GQ=RSS1/RSS2$$

$$RSS1= 4743,951 \quad GQ= 0,523$$

$$RSS2= 9066,314 \quad 1/GQ= 1,911$$

$$GQ < Fcrit$$

$$1/GQ < Fcrit$$

Durbin-Watson (DW)

$$\sum(\epsilon_i - \epsilon_{i-1})^2 = 43052,547$$

$$\sum\epsilon_i^2 = 34879,769$$

the value of the Durbin-Watson statistic for the final estimated model is:

$$DW = \sum(\epsilon_i - \epsilon_{i-1})^2 / \sum - \epsilon_i^2 = 1,234$$

$$0 \text{ dl du } 2 \text{ 4-du } 4\text{-dl } 4$$

$$0 \text{ 1,328 } 1,476 \text{ 2,000 } 2,524 \text{ 2,672 } 4,000$$

As we can see DW leads between 0 and dl, so we can say about strong positive autocorrelation in residuals.

Confidence intervals

$$I(t)= 324,537$$

$$I(+)= 401,482$$

$$I(-)= 247,593$$

$$Ireal= 386,802$$

Ireal belongs to (I(-);I(+))

$$\text{Error approximation is equal: } |I(t)-I(\text{real})|/|I(\text{real})| = 0,16$$

Forecasting.

If we suppose that in 2014 Income will be equal 600 bill \$, than Investments would be:

$$I(t)= 135,770 + 7,099*(600-566,97)=370,250 \text{ bill } \$$$

In the second half of the 20th century, Australian trade shifted away from Europe and North America to Japan and other East Asian markets. Regional franchising businesses, now a \$128 billion sector, have been operating co-branded sites overseas for years with new investors coming from Western Australia and Queensland.

Interpretation of coefficients

Now I am going to find out the economic meaning of the final estimated model by interpreting its coefficients. According to the final estimated model:

If Income go up by 1 bill dollars, Investments increase by 7.099 bill (positive dependence)

Литература

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