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Economics View project
ANALYSIS OF THE OIL, PRICE AND CURRENCY FACTOR OF ECONOMIC GROWTH IN AZERBAIJAN

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Abstract. The article examines the main macroeconomic indicators of the Azerbaijani economy, including GDP, GNI, CPI, exchange rate, fixed assets, investments, etc. Using statistical data of 2000–2016, the main factors influencing oil production and dependence on oil prices are determined, and econometric equations (models) are established and evaluated. In addition, the same macroeconomic indicators, combined with oil production factors and oil prices, created a complex regression equation that reflects the dependence of manat on the dollar and the CPI. Meanwhile, all the data were compared both with the previous year, and with the base year (2000=100). the statistical significance of the regression and correlation parameters in the models was calculated using the EViews 9, PASW Statistics 18 and Gretl software packages for each parameter (Sig. p<0.001, p<0.01, p<0.05) for each parameter. An economic interpretation of obtained results is provided.

Keywords: CPI, GDP, GNI, exchange rate, econometric models

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1. Introduction

In general, as in the whole world, the calculation of macroeconomic indicators in Azerbaijan and the identifying factors that influence them are of great importance, and significance of this research is emphasized. The key issue is find our how the economic development of the state, estimated by Gross Domestic Product (GDP), Gross National Income (GNI), Consumer Price Index (CPI), exchange rate, volume of investments, etc. depends from accurately selected and properly assessed impacting factors. At this time, many tools of economic, statistical and
econometric analysis can be used. The economic development of the world economy and its position in the world economy are determined by goods, services and resources that have a definite and relative advantage over the world market. From this point of view, Azerbaijan exports to the world market a hydrocarbon (oil and oil products), its richest natural resource. Naturally, its economy depends on market positions, market supply and world market prices for these products. As in these countries, the exchange rate of the national currency of Azerbaijan's manat depends on the world cost of these resources and the volume of production in Azerbaijan.

2.1. Literature review

Classic theories claim the economic development of any country has been influenced by physical and human capital (Solow 1956; Romer 1986; Lucas 1988). Besides those basic drivers of development, economic development is affected by array of other factors, such as institutional, legal, demographical, geographical, social and economic and political factors (e.g. Barro, 1999, 2003; Sachs and Warner, 1997; Burnside and Dollar, 2000, Easterly and Wetzel, 1989; Barro, 1990; Barro and Sala-i-Martin, 1992; Tvaronavičienė, Razminienė 2017; Mishenin et al., 2018; Mishenin et al., 2018; Kiseľáková et al., 2018).

Some strand of scientists researched dependence of economic increase on currency rate in developing countries. Thus, Dollar (1992) studied macroeconomic stability and economic increase in 95 developing countries during 1976–1985, Fischer (1992) studied stability and economic increase in Sahara region of Africa and Latin America and Carribean basins, Anyanwu (2014) studied several factors including inflation, price of agrarian product and analyses of oil price factors influencing economic increase in Africa during 1996–2010 and China during 1984–2010. Mundell (1963) and Tobin (1965) concluded that high inflation led to a decline in investment and capital inflows and low economic growth, and Fisher (1991) concluded that a theoretical framework would require long – term macroeconomic stability to improve the viability of economic growth.

2.2. Influence of currency rate to macroeconomic indicators

By De Grauwe and Schnabl (2008) the impact of the economic growth rates of the fixed exchange rate in 18 states of Southeast and Central Europe in 1994–2004 was examined with the help of the Dollar (1992), Easterly and Levin (1997), De Grauve and Schnabl 2008) examined the relationship between economic growth and the exchange rate. After the World War II, many countries in the world have initially introduced a more aggressive economic policy to increase the real GDP (Crafts, 2000). Mlambo and Oshikoya reviewed macroeconomic developments in Africa in terms of real GDP growth and the real exchange rate. Many economists studied macroeconomic indicators, e.g. inflation in GDP (Dunis and Triantafyllidis 2003, Wadhwni, 1986), the exchange rate (Goudie and Meeks, 1991). Ismikhan M. (2003) used inflation to determine the index of macroeconomic instability in Turkey, the ratio of external debt to GDP, the rate of budget deficit to GDP and the exchange rate. At the same time, Sánchez–Robles (2006) concluded that one of the factors causing macroeconomic instability in Spain in 1962 – 1995 is inflation. Kaneko and Lee (1995) outlined 8 factors among the factors affecting stock markets between the US and Japan, including oil prices, inflation and exchange rate fluctuations.

International financial shocks or crises depend on the exchange rate of economic systems and macroeconomic indicators (Dornbusch, 1976, Frankel, 1979, Bilson, 1981, Fama, 1984, Olivei, 2002, Campa and Goldberg, 2005, Cunado and De Gracia, 2005, Gehrke and Yao, 2013, Chang and Su, 2014, Gehrke and Yaob, 2014, Audzei and Brázdk, 2015). At the same time, when analyzing the effect of exchange rate fluctuations (Blomberg et al., 2005), it was concluded that in economic systems with a huge manufacturing industry, there are some changes in the exchange rate and the choice of currency.

Faia and Iliopoulos (2010) reviewed exchange rate relations and noted that an optimal fiscal policy requires a stable exchange rate to move from fixed rates. Parveen et al. (2012) reported that inflation is a key factor affecting
the exchange rate, while Macdonald and Ricci (2004) found that real commodity prices rose 1% due to an increase of about 0.5% of the real exchange rate. Khan et al. (1996) stressed the importance of the exchange rate in determining inflation growth. Choudhri and Khan (2002), Hyder and Shah (2005), Feenstra (1989); Olivey (2002) and Kampa and Goldberg (2005) studied the relationship between inflation and exchange rate both at the exchange rate and at the exchange rate.

2.3. Oil price and economic increase

Adebiyi et al (2009) determined the relationship between the oil price shock and the real exchange rate, Ghosh et al. (2010) determined the price of oil on the stock market. Hamilton (1983), one of the first scientists who studied dependence on oil price shocks and macroeconomic indicators, studied the economic cycle from 1948 to 1981. Mork, (1989), Pierre (1989) analyzed the positive and negative aspects of oil price fluctuations, Chaudhuri and Daniel (1998) noted that oil prices have a different effect on the US dollar exchange rate, Li Nee and Raati (1995) study 1944–1982 impact of the shock of oil prices on the US economy, in other words, GDP, and concluded that there is a correlation between them.

Hamilton (2008) argues that rising oil prices are more important than its fall. In addition, Imenez – Rodriguez and Sanchez (2005) investigated the impact of oil price shocks on real economic activity in the euro zone's industrial area and found that price increases exerted a stronger impact on GDP than the fall in prices, L'oeillet and Licheron (2008). We studied oil prices and inflation in the eurozone in 1970 and 2007. Hedayeh and David (2007) examined the impact of oil prices on US GDP in 1986–2006 and said that consumption, investment and government spending had a positive relationship with oil prices. Yu Xin (2007), examining the impact of rising oil prices and macroeconomic changes on a real product in Germany, concluded that such high prices did not have a negative impact on product volumes.

Moreover, Löschel and Ulrich (2009) concluded that the change in oil prices between 1973 and 2008 affected the German labor market and led to an increase in unemployment. In most research in which change of oil price in industrialized countries was studied, it was concluded that GDP growth rate and salary was decreasing during the oil crisis, which leads to inflation. However, the results of Blanchard and Gali (2008) were completely opposite, which meant that Japan's GDP did not decrease with the impact of oil price shock, but rather increased and could not find the reason. Tian (2010) also studied the impact of oil prices on Japan's GDP in 1984–2007.

Francois and Mignon (2008) drew attention to the relationship between oil prices and macroeconomic performance in the three OECD countries, oil importing countries and oil exporting countries.

Nagy and Al–Awadi, Mohammad (2001) concluded that, as a major oil exporter between 1984 and 1988, the impact of oil prices on Kuwait's economy was highly dependent on oil and key macroeconomic indicators. Philip and Akinsey (2006) published articles in Nigeria during the period 1970–2003 at real oil prices, the consumer price index, the real exchange rate, the five – step model reflecting real GDP, the real exchange rate of fluctuations in prices on oil and investigated the impact on money supply, inflation and said that, along with oil prices, the impact of money supply and the real exchange rate on its influence also affects economic activity. Oil prices have concluded that the impact on inflation and production is low. Marcel (2011) noted that the change in oil prices in Indonesia between 1990–2008 and 1998–2008 was heavily dependent on the impact of consumption and investment in the public sector, and Afia (2008) found that oil prices in Pakistan have a non – linear impact on production.

Katsuya (2008) studied the impact of oil prices and monetary and credit shocks on the level of real GDP and inflation in Russia in 1997–2007. He also noted that the impact of monetary shocks on the economy is stronger than the shock of oil prices. This contradicts the report of Hamilton and Henry (2004). The situation in Iran was
somewhat different. According to Mohammad and Gunther (2008), Iran's main revenues are oil exports, its price fluctuations are strong in the economy, macroeconomic indicators and GDP. That is, the positive impact of rising oil prices on the economy has a negative impact.

Turning to one of the industrialized countries, Hilde (2009) found that Norway's economy responded to higher oil prices with an increase in aggregate wealth and aggregate demand. Moreover, the impact of oil price fluctuations on the economy of South Korea and macroeconomic indicators that are gradually developing and in accordance with the developed economy of the IMF were analyzed by Rumi et al., (2010). Considering the impact of oil prices on the economy and the strategic importance of these changes, he observed his influence on industrial production and interest rates and came to the conclusion that the stock market is more likely to be affected, but only to quickly adjust the balance.

Determining the impact of oil price fluctuations on China's economic activity and macroeconomic performance in recent years, Jing He (2005) found that, based on an analysis of macroeconomic indicators for 1999–2004, as oil prices depend on China's price system and, in general, price of imported oil product of economic system, the higher price is, the more negative influence is to it and economic activity.

Though it is noted that many economists reported on the impact of the above oil prices on many macroeconomic indicators in their work, but the impact of these prices on the exchange rate (Cunado and De Gracia, 2005), oil prices and exchange rates were clearly contradictory. Hutchison (1993), Hamilton (2008), Inenez – Rodriguez and Sanchez (2005) investigated the impact of oil prices on the exchange rate for the economy. Chaudhuri and Daniel (1998), Amano and Norden (1998), Rautava (2007), Akram (2007), Dawson (2007), Al–Mulli et al. (2010), Ito (2010), Ghosh (2011) studied the relationship between exchange rates and oil prices in individual countries and concluded that there was a close relationship between them.

3. Results

3.1. Macroeconomic review

GDP in the period of oil boom 2014 reached to its high level. In that year it reached to 59014.1 million manat and increased by 27.7 times compared to 1995, 12.5 times compared to 2000, 4.7 times compared to 2005, 1.3 times compared to 2010. This indicator in dollars was as following: increased by 31.2 times compared to 1995, 14.3 times compared to 2000, 5.7 times compared to 2005, 1.5 times compared to 2010, 75234.7 million dollars. For certain reasons GDP in manat decreased by 7.9% compared to 2014 in 2015 and increased by 2 % compared to 2014 in 2016. However, this indicator was different in dollars: it decreased by 30.6 % compared to 2014 in 2015 and by 49.8 % compared to 2014 in 2016 (Fig.1).
As far as we know GDP increased by 5.1% in 2012 compared to previous, 6.2% in 2013 compared to previous, 1.4% in 2014 compared to previous, decreased by 7.9% in 2015 compared to previous and increased by 11.1% in 2016 compared to previous.
If we take a look at indicators of gross domestic income last 15 years it is clear that salary of employees reached to 10965.0 million manat in 2015, it was 22.7 times as much as in 1995, 10.7 times as much as in 2000, 3.9 times as much as in 2005, 1.6 times as much as in 2010, 1.0 times as much as in 2014.

However, decrease in rate of exchange of local manat 2 times caused to decrease in amount of salary of employees, production and import taxes, salary of the rest world, the whole composition of gross domestic income except of production of main funds by 1.2–20.1% in 2015 (Fig.2).

Let’s have a look at the economic operation account of the rest world. As this operation is related to oil export and world price of oil the maximal indicator of the study 2011 was recorded. Export of goods and service in foreign trade account of goods and service reached to 29388.3 million manat in 2011, it was 42.3 times as much as in 1995, 15.5 times as much as in 2000, 3.7 times as much as in 2005, 1.2 times as much as in 2010, but decreased by 2.5% in 2012, 5.1% in 2013, 13.2% in 2014, 30.01% compared to 2015, foreign trade balance reached to 16846.4 million manat in 2011 (in 1995 import was 446.5 million manat more than export), it was 199.1 times as much as in 2000, 13.3 times as much as in 2005, 1.17 times as much as in 2010, however, decreased by 11.1% in 2012, 23.5% in 2013, 40.3% in 2014, 90.03% in 2015 compared to 2011. The reason for decrease in the balance was the increase in the import of goods and service in a row.

Analyzing the socio – economic situation in the country, it is obvious that the trend towards GDP growth slowed down the rapid growth in 2011. But actual final consumer spending continued to grow in the aggregate. Almost 61.2% of actual final consumption expenditure and gross crop in 2012 increased by 12.3% compared to 2011 due to GDP and net exports growth of 38.8%, and in 2013, 60.3% of the growth rate of 14.4% compared to 19.9% in 2014 due to GDP growth and 39.7% of net exports, compared with 9.2% in 2014, GDP growth was 80.1%, and net exports decreased by 6.6% in 2015 to 100.0% of net exports. Considering the dynamics of GDP growth, it can be argued that the decline in GDP since 1987 slowed in 1995‒1996. The 1987‒1989 level was at the level of 2005‒2006 with the level of 1990‒1991. In 2005, the level of 1992 reached its level in 2003, from 1993 to 2001, to the level of 1994, and since 1998 this growth has been sustainable (Table 1).

| Year | 1995 | 1998 | 2001 | 2003 | 2005 | 2006 |
|------|------|------|------|------|------|------|
| 1987 | 100  | 100  | 100  | 100  | 100  | 100  |
| 1988 | 100  | 100  | 100  | 100  | 100  | 100  |
| 1989 | 100  | 100  | 100  | 100  | 100  | 100  |
| 1990 | 100  | 100  | 100  | 100  | 100  | 100  |
| 1991 | 100  | 100  | 100  | 100  | 100  | 100  |
| 1992 | 100  | 100  | 100  | 100  | 100  | 100  |
| 1993 | 100  | 100  | 100  | 100  | 100  | 100  |
| 1994 | 100  | 100  | 100  | 100  | 100  | 100  |
| 1995 | 100  | 100  | 100  | 100  | 100  | 100  |

Deposits of the population also continued to grow during the period of economic development. But for some reason, this growth has been observed in recent years with fluctuations. Thus, in 2014 compared to 2013, 32.5% of growth was 12.5% in foreign currency and 67.5% in national currency. In 2015, an increase of 31.7% compared with 2014 was due to an increase in deposits in foreign currency. 56.7% growth in 2.9 times in foreign currency offset the decline in savings in the national currency, and 43.3% led to an increase in overall economy of the population. The decrease of 21.7% in 2016 compared to 2015 was due to a decrease in savings in foreign currency. A significant increase in deposits in national currency allowed covering 4.7% of deposits in foreign currency. The above – mentioned price remains for oil, as our economy is oriented to export of raw materials, and manat is directly connected with the psychological factor.
Investments from all sources (including foreign investments) in 2009 amounted to 21.5% in national currency, 19.7% in US dollars, 21.9% of foreign investments in manat, 20.2% in US dollars, 21.1% %, a decrease of 19.5% in US dollars, 8.5% in national currency in 2015, 30.0% in US dollars, an increase in foreign investment by 19.9% in US dollars, 8.5% in dollars, domestic investment decline of 29.8% and a decrease in the dollar rate by 45.5% is due to a sharp drop in oil prices by 2–3 times. The increase in manat in 2016 and in 2015 may be due to a change in the exchange rate.

Credit investments into the economy also rapidly increased by 2015. Thus, reaching to 21730.4 million manat in 2015, it increased by 46.6 times, 15.1 times in 2005, 2.3 times in 2010, reaching to 5279.3 million manat in 2000 short – term credits increased by 15.7 times in 2000, 5.8 times in 2005, 2.1 times in 2010, and reaching to 16433 in 2016 and in 2015 may be due to a change in the exchange rate.

Gross foreign investments in 2016 increased by 10.9 times compared to 2000, by 2.1 times compared to 2005, by 2.1 times compared to 2010, financial credits in 2016 increased by 8.3 times compared to 2000, by 3.1 times compared to 2005, decreased by 35.5% compared to 2010, investment to oil industry in 2016 increased by 10.3 times compared to 2000, by 1.5 times compared to 2005, 1.9 times compared to 2010, investment to joint and foreign enterprises in 2016 increased by 14.5 times compared to 2000, 7.5 times compared to 2005, 2.9% times compared to 2010, other investments increased by 3.9 times compared to 2005 and decreased by 49.8% compared to 2010. But since 2012, these investments began to decline.

Despite the foregoing, it can be said that the experience of developed foreign countries proves that only market principles for regulating socio – economic processes can not guarantee a high level of prosperity for all its participants. As it turns out, the income of various groups of the population in market systems depends on their production factors, their availability, supply and demand for these factors. This is a fair market regulation.
However, in terms of social justice, the crisis of the market system of social and economic regulation was hidden here.

3.2. Econometric analysis

| Table 3. Econometric models |
|-----------------------------|
| const | Oil production | Oil price | R² | F  | P – (F) | DW |
| CPI | 87.1000*** | 0.091453 | 0.088111 | 0.271259 | F(2, 14) | 2.605612 | 1.068926 |
| (9.256) | (1.095) | (1.663) | | | | | |
| CPI | 95.3948*** | 0.102683* | 0.208792 | 0.417973 | F(1, 15) | 0.065192 | 0.065192 |
| (16.969) | (1.990) | | | | | | |
| Initial Income | 64.9131*** | 0.205753* | 0.205753* | 0.417973 | F(2, 14) | 0.022626 | 1.055547 |
| (3.693) | (1.795) | (2.079) | | | | | |
| GDP – manat | 0.450192 | 0.458485*** | 0.637411*** | 0.827483 | F(2, 14) | 4.55e – 06 | 1.531993 |
| (0.029) | (5.322) | (4.695) | | | | | |
| GDP – dollar | –45.3233** | 0.825662*** | 0.676960*** | 0.852302 | F(2, 14) | 1.53e – 06 | 1.158197 |
| (–2.326) | (4.776) | (6.171) | | | | | |
| GDP – euro | –29.9933 | 0.492114*** | 0.847824*** | 0.801909 | F(2, 14) | 40.39411 | 0.000012 | 1.273352 |
| (–1.509) | (4.399) | (4.809) | | | | | |
| GDP Per Person – manat | 1.04739 | 0.625909*** | 0.451904*** | 0.830243 | F(2, 14) | 34.23549 | 4.06e – 06 | 1.536565 |
| (0.070) | (4.731) | (5.383) | | | | | |
| GDP Per Person – dollar | –44.1788** | 0.811864*** | 0.667779*** | 0.853646 | F(2, 14) | 40.82931 | 1.44e – 06 | 1.44e – 06 |
| (–2.314) | (4.792) | (6.212) | | | | | |
| GDP Per Person – Euro | –29.0593 | 0.833912*** | 0.485209*** | 0.803803 | F(2, 14) | 28.67842 | 0.000011 | 1.273989 |
| (–1.494) | (4.832) | (4.431) | | | | | |
| t$= manat | 151.1077*** | –0.158234 | –0.280494* | 0.287158 | F(2, 14) | 2.819854 | 0.868080 |
| (6.095) | (–0.719) | (–2.011) | | | | | |
| t$= manat | 136.755*** | –0.305707** | 0.260804 | F(1, 15) | 0.036189 | 0.952086 |
| (9.445) | (–2.301) | | | | | | |
| t$= manat | 134.601*** | –0.204283 | –0.0683822 | 0.078906 | F(2, 14) | 0.562508 | 1.038975 |
| (4.988) | (–0.853) | (–0.451) | | | | | |
| t$= manat | 130.262*** | –0.231351 | 0.065572 | F(1, 15) | 0.321169 | 0.921756 |
| (5.314) | (–1.026) | | | | | | |
| t$= manat | 116.072*** | –0.100933*** | 0.031004 | F(1, 15) | 0.499038 | 1.141232 |
| (7.312) | (–0.6928) | | | | | | |
| GNI – manat | 9.34766 | 0.548435*** | 0.457368*** | 0.772716 | F(2, 13) | 0.000066 | 1.554170 |
| (0.529) | (3.583) | (4.629) | | | | | |
| GNI – dollar | –22.3066 | 0.690792*** | 0.608516*** | 0.808995 | F(2, 13) | 0.000021 | 1.286427 |
| (–1.082) | (3.867) | (5.278) | | | | | |
| GNI – euro | –6.24940 | 0.712763*** | 0.418564*** | 0.750158 | F(2, 13) | 0.000122 | 1.388989 |
| (–0.308) | (4.059) | (3.693) | | | | | |
| GNI Per Person – manat | 9.86068 | 0.537954*** | 0.450640*** | 0.775964 | F(2, 13) | 0.000060 | 1.564009 |
| (0.573) | (3.607) | (4.681) | | | | | |
| GNI Per Person – dollar | –21.4052 | 0.678497*** | 0.599980*** | 0.811422 | F(2, 13) | 0.000020 | 1.291411 |
| (–1.063) | (3.889) | (5.327) | | | | | |
| GNI Per Person – euro | –5.56714 | 0.700429*** | 0.412317*** | 0.753667 | F(2, 13) | 0.000111 | 1.404250 |
| (–0.282) | (4.093) | (3.733) | | | | | |
| Funds | 91.2378*** | 0.0897165 | 0.111723*** | 0.515071 | F(2, 14) | 0.006306 | 1.964528 |
| (13.949) | (1.545) | (3.032) | | | | | |
| Funds | 99.3752** | 0.126019* | 0.432408 | F(1, 15) | 0.04120 | 1.881101 |
| (24.47) | (3.380) | | | | | | |
| Investments | 111.998** | –0.471343** | 0.561874 | 0.299214 | F(2, 14) | 0.038304 | 1.032906 |
| (2.634) | (–1.250) | (2.348) | | | | | |
| Investments | 69.2464** | 0.486770* | 0.221043 | F(1, 15) | 4.256510 | 0.056855 | 0.977720 |
| (2.694) | (2.063) | | | | | | |

Note: 1. (t – stat); 2. * p<0.05; ** p<0.01; *** p<0.001.
Let’s look through econometric model established in order to determine dependence of main macroeconomic indicators on oil formation and oil price (Fig.3.). Compared with previous years, models show that the model has economic sense and is statistically significant, which reflects the dependence of gross domestic product on oil and gas prices, oil prices and oil production. These models also fluctuated $0.80191 < R^2 < 0.85230$. Coefficients $p < 0.05$; $p < 0.01; p < 0.001$. It can be attributed only to the level of GDP per capita, either in dollars or in euros. Thus, here also $0.80383 < R^2 < 0.85366$ and the coefficients $p < 0.05$; $p < 0.01; p < 0.001$. Then the models of dependence on gross national income, both in manats, and in dollars and euros, depend on oil prices and oil production. It is true that $R^2$ is slightly lower and $0.750158 < R^2 < 0.808995$. However, there were statistically significant indicators of oil and
oil production. p<0.05; p<0.01; p<0.001. Such a case can be attributed to the models of the price of oil and oil dependence of the gross national income, both in manats, in dollars and in euros per capita. These models also have economic and statistical significance. These models are slightly lower than the gross domestic product R², which ranges from 0.75367<R²<0.81142. In these models, the coefficients of oil and oil production are statistically significant p<0.05; p<0.01; p<0.001. In the primary population income model is p<0.05; p<0.01; p<0.001 and R²=0.417973. There is no doubt about the economic significance and statistical significance of the CPI, neither key assets, nor investment models for oil prices, and dependence on oil production. In these models are responded p<0.05; p<0.01 p<0.001 in separate. Although the dependence models at the exchange rate of the manat for the euro cannot be related to oil prices and dependence on oil production. p<0.05; p<0.01; p<0.001 is separated. Although the dependence models at the exchange rate of the manat for the euro cannot be related to oil prices and dependence on oil production. In these models, the condition p<0.01 is not satisfied in full. p<0.05 is satisfied once. In these models, R² is very small (0.20879<R²<0.22712). US dollar and euro exchange rates in US dollars are based on oil prices and oil production dependence models at p<0.001 for a fixed amount, but only once in the price of oil. The condition p<0.01 is separated. Although the dependence models at the exchange rate of the dollar are 0.26081<R²<0.22815, the exchange rate of the manat for the euro cannot be related to oil prices and dependence on oil production (Table 3). But this is not so. Like all macroeconomic indicators, the manat exchange rate for both the dollar and the euro depends on oil prices and oil production (perhaps even more). Simply, the Central Bank for a long time maintained a stable exchange rate (with intervention) in the foreign exchange market and did not allow its natural fluctuations.

Table 4. Econometric models

| Model | const       | Oil production | Oil price   | R²         | F       | P – (F)       | DW     |
|-------|-------------|----------------|-------------|------------|---------|---------------|--------|
| CPI   | 54.2635     | 0.503687**     | 0.003379*** | 0.733257   | F(2. 14) | 0.000996      | 0.321708 |
|       | (2.544)     | (3.820)        | (0.028)     |            | 19.24246 |               |        |
| CPI   | 54.3283**   | 0.506622***    | 0.733241    |            | F(1. 15) | 0.00012       | 0.325824 |
|       | (2.651)     | (6.421)        |             |            | 41.23062 |               |        |
| CPI   | 93.9611***  | 0.360844***    | 0.455238    |            | F(1. 15) | 0.002967      | 0.324536 |
|       | (3.653)     | (3.540)        |             |            | 12.53495 |               |        |
| Initial Income | -215.168     | 3.13447***    | 0.187865    | 0.579048   | F(2. 14) | 0.002342      | 0.171695 |
|       | (-1.095)    | (2.582)        | (0.1712)    |            | 9.628999 |               |        |
| Initial Income | 31.8735     | 2.41239***    | 0.378671    |            | F(1. 15) | 0.008553      | 0.249111 |
|       | (0.1583)    | (3.024)        |             |            | 9.141782 |               |        |
| Initial Income | -211.568     | 3.29764***    | 0.578167    |            | F(1. 15) | 0.000395      | 0.185893 |
|       | (-1.120)    | (4.534)        |             |            | 20.55913 |               |        |
| GDP – manat | -300.037*    | 3.20807       | 0.923614*** | 0.762184   | F(2. 14) | 0.00043       | 0.217255 |
|       | (-1.895)    | (3.278)        | (1.044)     |            | 22.43457 |               |        |
| GDP – manat | -47.1958     | 3.20307***    | 0.579630    |            | F(1. 15) | 0.000385      | 0.279188 |
|       | (-0.2658)   | (4.548)        |             |            | 20.68286 |               |        |
| GDP – dollar | -387.070***  | 2.03706**     | 2.58616***  | 0.875995   | F(2. 14) | 4.51e–07      | 0.300526 |
|       | (-3.179)    | (2.707)        | (3.802)     |            | 49.44934 |               |        |
| GDP – euro | -224.647*    | 1.62956**     | 1.45817***  | 0.804074   | F(2. 14) | 0.000011      | 0.280384 |
|       | (-2.128)    | (2.497)        | (2.472)     |            | 28.72775 |               |        |
| GDP. Per Person | -162.168     | 2.60868**     | 0.149399    | 0.644596   | F(2. 14) | 0.000716      | 0.219318 |
| – manat | (-1.142)    | (2.971)        | (0.188)     |            | 27.09897 |               |        |
| GDP Per Person | -139.306     | 2.73844***    | 0.643697    |            | F(1. 15) | 0.00107       | 0.240612 |
| – manat | (-1.166)    | (5.206)        |             |            | 10.88539 |               |        |
| GDP Per Person | 43.4333      | 2.00077***    | 0.420523    |            | F(1. 15) | 0.00866       | 0.272945 |
| – dollar | (0.2838)    | (3.299)        |             |            | 10.88539 |               |        |
| GDP Per Person | -319.654***  | 1.72431***    | 2.25587***  | 0.903144   | F(2. 14) | 8.00e–08      | 0.346882 |
The base year 2000 was adopted, and the main macroeconomic indicators, oil production and oil prices dependence for determining established econometric models (Fig. 4). It is clear that the gross domestic product in currency, dollar and euro and oil price growth and oil production in reflects the model's interdependence with some variables have a certain economic meaning and are statistically significant. In these models fluctuated $0.579630 \times R^2 < 0.875995$. The sums were calculated for individual models at $p < 0.05; p < 0.01; p < 0.001$. This is especially noticeable in the models of the dollar and euro. It can be attributed only to the level of GDP per capita, either in dollars or in euros. Thus, here also $0.42052 < R^2 < 0.90314$ and the coefficients $p < 0.05; p < 0.01; p < 0.001$ are satisfied individually, and the strongest dependence is observed in the dollar model (Table 4).

Then the models of dependence on gross national income, both in manats, and in dollars and euros, depend on oil prices and oil production. It is true that the $R^2$ limit for these models is somewhat lower, but the upper limit is

| GDP Per Person – euro | −179.106** | 1.35766** | 1.28188** | 0.837073 | F(2.14) | 3.05e – 06 | 0.318880 |
|-----------------------|------------|-----------|-----------|----------|---------|------------|-----------|
|                       | (−2.218)   | (2.719)   | (2.840)   | (−2.083) |         |            |           |
| 1S= manat              | 115.999*** | 0.116276  | −0.179910*| 0.362403 | F(2.14) | 0.042837   | 1.103503  |
|                       | (9.666)    | (1.568)   | (−2.683)  | (−2.399) |         |            |           |
| 1S= manat              | 125.156*** | −0.0973893| 0.250487  | 35.96395 | F(1.15) | 0.040741   | 0.758334  |
|                       | (11.40)    | (−2.399)  | (2.399)   | (5.012998) |         |            |           |
| 1S= manat              | 112.545*** | −0.0399842| 0.034500  | 5.012998 | F(1.15) | 0.475382   | 0.677388  |
|                       | (7.935)    | (−0.0399842) |         |         |         |            |           |
| 1S= manat              | 116.523*** | 0.191266* | −0.125600| 0.362403 | F(2.14) | 0.159765   | 1.151248  |
|                       | (7.677)    | (2.039)   | (−1.481)  | (2.069752) |         |            |           |
| 1S= manat              | 114.117*** | 0.0821770 | 0.109935  | 2.069752 | F(1.15) | 0.193570   | 0.844181  |
|                       | (7.278)    | (1.361)   | (1.852693) |         |         |            |           |
| 1S= manat              | 131.598*** | 9.024     | 0.002049  | 2.069752 | F(1.15) | 0.863039   | 0.732499  |
|                       | (9.024)    | (0.1755)  | (0.030798) |         |         |            |           |
| GNI – manat            | −290.006*  | 1.95956*  | 1.89195*  | 0.804881 | F(2.13) | 0.000024   | 0.218510  |
|                       | (−2.124)   | (2.087)   | (2.220)   | (0.362403) |         |            |           |
| GNI – dollar           | −368.914** | 1.67995*  | 2.70574***| 0.849483 | F(2.13) | 4.51e – 06 | 0.252552  |
|                       | (−2.732)   | (1.810)   | (3.210)   | (36.68444) |         |            |           |
| GNI – euro             | −213.863*  | 1.27320   | 1.64701** | 0.778206 | F(2.13) | 0.000056   | 0.231568  |
|                       | (−1.889)   | (1.636)   | (2.331)   | (22.80646) |         |            |           |
| GNI – euro             | −133.994   | 2.60310** | 0.732545  | 0.000023 | F(2.13) | 0.552521   |           |
|                       | (−1.240)   | (6.192)   | (38.34517) |         |         |            |           |
| GNI – euro             | −186.766   | 2.77334***| 0.685526  | 0.000075 | F(1.14) | 0.333312   |           |
|                       | (−1.445)   | (5.524)   | (30.51884) |         |         |            |           |
| GNI – dollar           | −233.325** | 1.70445** | 1.60006** | 0.836653 | F(2.13) | 7.68e – 06 | 0.227865  |
|                       | (−2.221)   | (2.360)   | (2.440)   | (33.29268) |         |            |           |
| GNI – euro             | −303.657** | 1.48977*  | 2.28671***| 0.875268 | F(2.13) | 1.33e – 06 | 0.262250  |
|                       | (−2.917)   | (2.082)   | (3.519)   | (45.6154) |         |            |           |
| GNI – euro             | −169.699** | 1.10746*  | 1.38988*  | 0.806937 | F(2.13) | 0.000023   | 0.237129  |
|                       | (−1.915)   | (1.818)   | (2.513)   | (27.16769) |         |            |           |
| Funds                  | −10.2660   | 1.64310** | −0.207976 | 0.523013 | F(2.14) | 0.005618   | 0.175287  |
|                       | (−0.105)   | (2.714)   | (−0.380)  | (7.675438) |         |            |           |
| Funds                  | −14.2506   | 1.46246***| 0.518094  | 0.001123 | F(1.15) | 0.150809   |           |
|                       | (−14.3006) | (4.016)   | (16.12638) |         |         |            |           |
| Funds                  | 119.234    | 0.958125  | 0.272147  | 0.031732 | F(1.15) | 0.234996   |           |
|                       | (1.168)    | (2.368)   | (5.608564) |         |         |            |           |
| Investments            | −201.559   | 3.01110*  | 1.86882   | 0.621462 | F(2.14) | 0.001114   | 0.190778  |
|                       | (−0.7695)  | (1.860)   | (1.277)   | (11.49219) |         |            |           |
| Investments            | −165.754   | 4.63425***| 0.577383  | 0.000401 | F(1.15) | 0.359331   |           |
|                       | (−0.6235)  | (4.527)   | (20.49312) |         |         |            |           |
| Investments            | 35.7590    | 4.00579***| 0.527958  | 0.000954 | F(1.15) | 0.213196   |           |
|                       | (0.1449)   | (4.096)   | (16.77684) |         |         |            |           |

Note: 1.(t – stat); 2. *p<0.05; **p<0.01; ***p<0.001;
somewhat lower and is 0.68553<R^2<0.84948. However, there were statistically significant indicators of oil and oil production. p<0.05; p<0.01; conditions p<0.001 are satisfied on both models on some models and on some models separately. Such a case can be attributed to the models of the price of oil and oil dependence of the gross national income, both in manats, in dollars and in euros per capita. These models also have significant and statistical significance. The upper limit of R^2 for these models is slightly higher than the growth model for gross domestic product and is 0.806937<R^2<0.875268. In these models, the coefficients of oil and oil production are statistically significant p<0.05; p<0.01; p<0.001. On the models of dependence of CPI oil prices and oil production p<0.05; p<0.01 p<0.001 and 0.45552<R^2<0.73326. For population incomes, p<0.05; p<0.01; conditions p<0.001 were satisfied on both models on some models and on some models separately and amounted to 0.37867<R^2<0.57905. The models of dependence on the basic prices for oil and natural gas and oil prices also have economic meaning and statistical significance. Thus, in the models of the main fund, p<0.05; the terms p<0.01 p<0.001 are satisfied separately. On this point less, significant factor was removed from the model. R^2 is rather low here. Thus, in the model on dependence of main funds on oil price and oil production was nearly 0.27215<R^2<0.52301. It is observed a bit better situation in the model on dependence of volume of investment on oil price and oil production. Here p<0.05; p<0.01; and p<0.001 conditions were satisfied separately. On this point, less significant model was removed from the factor. R^2 is rather in normal level. It was between 0.523013<R^2<0.621462. In the model on dependence of dollar rate and euro rate to manat on oil price and oil production p<0.01 condition is responded to constant quantity. p<0.05 and p<0.01 are satisfied separately. In the model on dependence of manat rate to dollar is 0.03450<R^2<0.362403, to euro is 0.00205<R^2<0.23049 (Table 4). Consequently, these models also show that the manat does not depend on the dollar and the euro's exchange rate on oil prices and dependence on oil production. In fact, as we have already seen, this is not so. Like all macroeconomic indicators, the manat exchange rate for both the dollar and the euro depends on oil prices and oil production (perhaps even more). Simply, the Central Bank for a long time maintained a stable exchange rate (with intervention) in the foreign exchange market and did not allow its natural fluctuations.

### Table 5. Comparative to the previous year

|                      | const | Consumer Price Index | I$= manat | Oil production | Oil price | R^2  | F (4. 12) | P – (F) | DW          |
|----------------------|-------|----------------------|-----------|----------------|-----------|-------|-----------|----------|-------------|
| **Initial Income**   |       |                      |           |                |           |       |           |          |             |
| GDP – Manat          | −47.5030 | 1.6575***           | −0.237386*| 0.07987        | 0.04348   | 0.777502 | F(4. 12) | 0.000687 | 1.411902    |
|                      | (−1.512) | (4.394)              | (−1.805) | (0.684)        | (0.569)   |       |           |          |             |
| GDP – dollar         | −105.595*** | 1.13132***         | 0.05577   | 0.54534***     | 0.36262***| 0.923695 | F(4. 12) | 1.29e−06  | 1.742967    |
|                      | (−3.589) | (3.202)              | (4.328)   | (4.988)        | (5.070)   |       |           |          |             |
| GDP Per Person – manat| −72.6404 | 1.10451*           | −0.311778**| 0.620103**   | 0.544644***| 0.916310 | F(4. 12) | 2.23e−06  | 1.556988    |
|                      | (−1.713) | (2.170)              | (2.883)   | (3.936)        | (5.284)   |       |           |          |             |
| GDP Per Person – dollar| −101.969*** | 1.08882***        | 0.0607734 | 0.538748***   | 0.360123***| 0.924411 | F(4. 12) | 1.22e−06  | 1.719496    |
|                      | (−3.545) | (3.153)              | (0.505)   | (5.041)        | (5.151)   |       |           |          |             |
| GNI – manat           | −69.3647 | 1.06253*            | −0.500449**| 0.612458**   | 0.539937***| 0.916307 | F(4. 12) | 2.23e−06  | 1.534090    |
|                      | (−1.662) | (2.120)              | (2.864)   | (3.949)        | (5.322)   |       |           |          |             |
| GNI – dollar          | −129.538*** | 1.49903***         | 0.124326  | 0.411032***   | 0.292460**| 0.906896 | F(4. 11) | 0.000013 | 2.197112    |
|                      | (−3.116) | (3.851)              | (0.517)   | (3.471)        | (3.642)   |       |           |          |             |
| GNI Per Person – manat| −132.305** | 1.56792**          | −0.179092 | 0.503294**   | 0.446029**| 0.894021 | F(4. 11) | 26.78688  | 32.84523    |
|                      | (−2.343) | (2.966)              | (−0.548) | (3.081)       | (4.089)   |       |           |          |             |
| GNI Per Person – dollar| −126.124*** | 1.45418***        | 0.131599  | 0.406219***   | 0.290310***| 0.907858 | F(4. 11) | 0.000012 | 2.191801    |
|                      | (−3.107) | (3.826)              | (0.561)   | (3.459)        | (3.702)   |       |           |          |             |
| GNI Per Person – dollar| −128.822** | 1.52166**          | −0.167989 | 0.497355**   | 0.420989**| 0.894228 | F(4. 11) | 23.91862  | 32.84523    |
|                      | (−2.323) | (2.930)              | (−0.523) | (3.100)       | (4.127)   |       |           |          |             |
| Funds                | 131.547*** | −0.461149***       | −0.001065 | 0.131672**   | 0.152283**| 0.729490 | F(4. 12) | 0.002107 | 2.676491    |
|                      | (9.309)  | (−2.718)             | (−0.048) | (2.508)       | (4.433)   |       |           |          |             |
| Investments          | 158.301 | −1.54914             | 0.658443  | −0.195161     | 0.743396**| 0.410142 | F(4. 12) | 0.145770 | 1.236891    |

Note: 1. (t – stat); 2. *p<0.05; **p<0.01; ***p<0.001.
Now let's look at the macroeconomic indicators of the past year, the consumer price index, the US dollar rate, the price of oil and dependence on oil production. In the model of population dependencies, only CPI (p<0.001) and $1/pounds (p<0.05) were statistically significant, and $2 =0.777502. The gross domestic product – only 1 US dollar/manat in the manat model is statistically insignificant, and the other three factors are statistically significant (p<0.001) and $2 =0.777502. The group of the domestic product is the consumer price index in the dollar model (p<0.05) (p<0.01), the price of oil (p<0.001) and oil production (p<0.001) are statistically significant, and $2 = 0.91631. The gross domestic product – $ per man for manat – is statistically unimportant and statistically significant (p<0.001) and $2 =0.92441. Gross domestic product – dollar CPI (p<0.05) and other remaining factors are statistically significant (p<0.01) and $2 =0.92441. The gross national income – $1/manat in the manat model is statistically insignificant, other factors are statistically significant (p<0.001) and $2 =0.90786. Gross national income – $1/manat in the dollar model is statistically insignificant, the CPI and oil production (p<0.05) and the oil price (p<0.001) are statistically significant, and $2 =0.899402. $1/manat for gross national income per person is statistically insignificant, other factors are statistically significant (p<0.001) and $2 = 0.90786. In the basic fund model, 1 dollar/manat is statistically insignificant, the price of oil (p<0.001) and other remaining factors are statistically significant (p<0.05) and $2 =0.72949. However, in the investment model, the price of oil (p<0.01) is statistically significant, and the remaining factors are statistically insignificant and $2 =0.41014 (Table 5).

### Table 6. Comparative to the base year

|                | const       | Consumer Price Index | IS= manat | Oil production | Oil price | $2 | F      | P – (F) | DW |
|----------------|-------------|----------------------|-----------|----------------|-----------|----|--------|--------|-----|
| Initial Income | −515.948*** | 9.6926***            | −1.93244*** | −1.37796***    | −0.087602 | 0.992180 | F(4. 12) | 380.63 | 1.59e – 12 1.590599 |
| GDP – Manat    | (−7.736)    | (23.56)              | (−3.343)  | (−5.388)       | (−0.4938) |    |        |        |     |
| GDP – dollar   | −589.271*** | 7.71646***           | −1.11277** | −0.466062**    | 0.757964*** | 0.997031 | F(4. 12) | 1007.385 | 4.78e – 15 1.561538 |
| GDP Per Person – Manat | (−13.37) | (28.39)              | (−2.909)  | (−2.758)       | (6.466)   |    |        |        |     |
| GDP Per Person – Dollar | (−1.454) | (10.21)              | (−5.903)  | (−2.336)       | (7.546)   |    |        |        |     |
| GNI – manat    | −434.659*** | 6.84571***           | −0.84945* | −0.679693***   | 0.019575  | 0.987365 | F(4. 12) | 234.434 | 2.82e – 11 1.479640 |
| GNI – dollar   | (−8.051)    | (20.56)              | (−1.815)  | (−3.270)       | (0.1363)  |    |        |        |     |
| GNI Per Person – manat | (−1.266) | (9.362)              | (−5.914)  | (0.7488)       | (8.399)   |    |        |        |     |
| GNI Per Person – Dollar | (−0.713) | (23.02)              | (−2.383)  | (−3.895)       | (4.357)   |    |        |        |     |
| Funds          | −339.455*   | 7.39100***           | −3.66295* | −0.620078      | 1.552811  | 0.987608 | F(4. 11) | 746.4331 | 2.62e – 13 1.811459 |
| Investments    | −441.752*** | 6.34234***           | −1.12544** | −0.379296**    | 0.608989*** | 0.997334 | F(4. 11) | 219.1612 | 2.09e – 10 1.980804 |
| GNI Per Person – manat | (−0.202) | (9.989)              | (−2.915)  | (−1.563)       | (5.404)   |    |        |        |     |
| GNI Per Person – Dollar | (−7.823) | (24.74)              | (−2.586)  | (−2.761)       | (6.118)   |    |        |        |     |
| Funds          | −252.466*   | 5.61047***           | −3.02943* | −0.242597      | 1.411755  | 0.988590 | F(4. 11) | 1028.787 | 4.51e – 14 1.821887 |
| Investments    | (−3.233)    | (10.93)              | (−0.5734) | (−2.221)       | (1.486)   |    |        |        |     |
| Note: 1.(t – stat); 2. *p<0.05; **p<0.01; ***p<0.001.

Considering the base year 2000, let's look at the latest models, macroeconomic indicators in comparison with this, the consumer price index, the US dollar rate, oil prices and dependence on oil production. In the population dependence model, only statistical indicators are statistically significant for all factors: CPI, US dollar exchange rate, oil prices and oil production (p<0.001), and $2 =0.992180. Gross domestic product is statistically significant, only 1 US dollar (p<0.01) and the remaining three factors (p<0.001) in GDP and $2 = 0.99703. Gross domestic product – but dollar oil production is statistically unimportant, the other three factors (p<0.001) are statistically

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significant and $R^2=0.93737$. Gross domestic product – price per person – the price of oil was statistically insignificant, provided $p<0.05$ and other factors ($p<0.001$) and $R^2=0.99172$. In gross domestic product, oil production is statistically unimportant, and the remaining factors are statistically significant ($p<0.001$) and $R^2=0.98865$. Gross national income was statistically significant with the condition $\$1/pound ($p<0.01$) and other factors ($p<0.001$) and $R^2=0.99632$. Gross national income – dollar oil production was statistically insignificant, provided $p<0.01$ the remaining statistical indicators were statistically significant ($p<0.001$) and $R^2=0.97606$. The gross national income per capita was US $1/manat, and oil production was statistically significant ($p<0.001$) and $R^2=0.99733$. Gross national income per dollar oil production is statistically unimportant, from $\$1/barrel ($p<0.01$) and other factors ($p<0.001$) and $R^2=0.96396$. It is statistically significant with the condition for oil production ($p<0.01$), CPI factor ($p<0.001$) and $R^2=0.9859$. It is statistically significant with the condition for oil production ($p<0.01$), CPI factor ($p<0.001$) and $R^2=0.96251$ (Table 6).

4. Conclusions

It is well known that from the economic and ecological analysis it is clear that at high oil production levels and high oil prices, economic growth and economic growth have reached the highest level. At that time, the exchange rate of the manat was relatively stable (approximately for 10 years it remained at the level of 1 dollar = 0.8 manat). This also created some difficulties in the study. Despite the fact that the exchange rate is a key factor, it was chosen because of its statistical significance in models that affect the dynamics of a number of macroeconomic indicators. Naturally, if there were no hard, and not strict, measures to maintain the exchange rate of manat in the state, and manat moves in a slightly free and regulated mode of navigation, then as a result of the drop in oil prices in 2014–2015, and the indicators obtained as a result of the analysis will be important in future forecasts. The final conclusion is that macroeconomic indicators and the world market are subject to this law, because in the law of demand there are life and economy, as well as the basic law of microeconomics. In this regard, the use of oil revenues for various sectors of the economy in order to maintain a constant exchange rate, it is necessary to slightly reduce the foreign exchange market and further improve the policy of soft exchange.

References

Adebiyi, M.A.; Adenuga, A.O.; Abeng, M.O. and Omanukwue, P.N. (2009). Oil Price Shocks, Exchange Rate and Stock Market Behaviour: Empirical Evidence from Nigeria. A Paper Presented at the 15 Annual African Econometric Society (AES): Conference on Econometric Modeling for Africa held in Abuja. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.589.4418&rep=rep1&type=pdf

Afia Malik. (2008). Crude Oil Price, Monetary Policy and Output: The Case of Pakistan. The Pakistan Development Review, 47(4), 425-436. http://www.pide.org.pk/pdf/PDR/2008/Volume4/425-436.pdf

Akram, Q.F. (2007). Oil prices and exchange rates: Norwegian experience. Econometrics Journal, 7(2), 476-504. https://doi.org/10.1111/j.1368-423X.2004.00140.x

Al – Mulali, U. (2010): The Impact of Oil Prices on the Exchange Rate and Economic Growth in Norway. MRPA Paper No. 26257 https://mpra.ub.uni-muenchen.de/24478/1/MPRA_paper_24478.pdf

Amano, R.A. and S. van Norden. (1998). Oil Prices and the rise and fall of the US Real Exchange Rate. Journal of International Money and Finance, 17(2), 299–316. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.42.6203&rep=rep1&type=pdf

Anyanwu, J. C. (2014). Factors Affecting Economic Growth in Africa: Are there any lessons from China? African Development Review, 26 (3), 468–493. https://doi.org/10.1111/1467-8268.12105

Augustin K.F., Kapukile M., Temitope W. Oshikoya. (2001). Business Environment and Investment in Africa: an Overview Journal of African Economies, Volume 10, Issue suppl_2, 1st September 2001, Pages 1–11. https://www.researchgate.net/publication/30946477_Business_Environment_and_Investment_in_Africa_an_Overview

1348
Audzei, V., Brázdik, F. (2015). Exchange Rate Dynamics and its Effect on Macroeconomic Volatility in Selected CEE Countries, No. 2015/07. http://www.cnb.cz/miranda2/export/sites/www.cnb.cz/en/research/research_publications/cnb_wp/download/cnbwp_2015_07.pdf

Barro, R. J. (1990). Government Spending in a Simple Model of Endogenous Growth. Journal of Political Economy, 98(5), S103–S125. https://www.nber.org/papers/w2588.pdf

Barro, R. J., and X. Sala – i – Martin. (1992). Public Finance in Models of Economic Growth. The Review of Economic Studies, 59(4), 645–661. https://doi.org/10.2307/2297991

Barro, R. J. (1999). Determinants of Economic Growth: Implications of the Global Evidence for Chile. Cuadernos de Economia, 36(107), 443–478. http://economia.uc.cl/docs/107barra.pdf

Blanchard, O.J. & Gali, J. (2008). The Macroeconomic Effects of Oil Shocks: Why Are the 2000s So Different from the 1970s?. International Dimensions of Monetary Policy. Economics Working Papers 1045, Department of Economics and Business, Universitat Pompeu Fabra, revised Oct 2008. https://doi.org/10.7208/chicago/9780226278872.003.0008

Bilson, J.F. (1981). The speculative efficiency hypothesis. Journal of Business, 54, 435–452. https://www.nber.org/papers/w0474.pdf

Blomberg, S.B., Frieden, J., Stein, E. (2005). Sustaining fixed rates: The political economy of currency pegs in Latin America. Journal of Applied Economics, 8(2), 203–225. https://ucema.edu.ar/publicaciones/download/volume8/blomberg.pdf

Burnside, C., and D. Dollar. (2000). Aid, Policies, and Growth. The American Economic Review, 90(4), 847–868. http://fadep.org/wp-content/uploads/2016/10/D-18_AID_POLICIES_GROWTH.pdf

Easterly, W. R., and D. L. Wetzel. (1989). Policy Determinants of Growth: Survey of theory and evidence. Policy, Planning and Research Working Papers Series No. 343, Washington D.C., World Bank, pp. 1–41. http://documents.worldbank.org/curated/en/967171468740703325/pdf/multi0page.pdf

Campa, J.M., Goldberg, L.S. (2005). Exchange rate pass-through into import prices: a macro or micro phenomenon? Review of Economics and Statistics, 87(4), 679–690. https://doi.org/10.1162/rest.2005.87.4.679

Chang, M.J., Su, C.Y. (2014). The dynamic relationship between Exchange rates and macroeconomic fundamentals: Evidence from pacific rim countries. Journal of International Financial Markets, Institutions and Money, 30, 220–246. http://isiarticles.com/bundles/Article/pre/pdf/45775.pdf

Chaudhuri, Kausik & C Daniel, Betty. (1998). Long – run equilibrium real exchange rates and oil prices. Economics Letters. 58. 231–238. https://sociometru.d/repcee/ecolet/v58y1998i2p231-238/http://www.sciencedirect.com/science/article/pii/S0165-1765(97)00282-6

Choudhri, E.U., Khan, M.S. (2002). The exchange rate and consumer prices in Pakistan: Is rupee devaluation inflationary? The Pakistan Development Review, 41(2), 107–120. http://www.pide.org.pk/pdf/PDR/2002/Volume2/107-120.pdf

Crafts, N. F. (2000). Globalization and Growth in the Twentieth Century. IMF Working Papers 00/44, International Monetary Fund. https://www.imf.org/external/pubs/ft/wp/2000/wp0044.pdf

Cunado, J., De Gracia, F.P. (2005). Oil prices, economic activity and inflation: Evidence for some Asian countries. The Quarterly Review of Economics and Finance, 45(1), 65–83. http://www.sciencedirect.com/science/article/pii/S0165-9769(04)00083-3

Dawson, J.C. (2007). The effect of oil prices on exchange rates: A case study of the Dominican Republic. Undergraduate Economic Review, 3(1), 4. https://digitalcommons.iwu.edu/cgi/viewcontent.cgi?article=1023&context=uer

De Grauwe, P. and Schnabl, G. (2008). Exchange rate stability, inflation, and growth in (South) Eastern and Central Europe. Review of Development Economics, 12(3), 530–549. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.111.569.5121&rep=rep1&type=pdf
Dollar, D. (1992). Outward – Oriented Developing Economies Really do Grow more rapidly: Evidence form 95 LDCs, 1976–1985. *Economic Development and Cultural Change* 40 (3): 523–544. [http://www.tcd.ie/Economics/staff/minnsc/EC4020/dollar%20edcc%201992.pdf](http://www.tcd.ie/Economics/staff/minnsc/EC4020/dollar%20edcc%201992.pdf)

Dornbusch, R. (1976), Expectations and exchange rate dynamics. *Journal of Political Economy*, 84(6), 1161–1176. [https://www.unich.it/~vitale/Dornbusch_overshooting.pdf](https://www.unich.it/~vitale/Dornbusch_overshooting.pdf)

Dunis, C. L. and Triantafyllidis, J. A. (2003). Alternative forecasting techniques for predicting company insolvencies: The UK example (1980 – 2001). *Neural Network World*, 13, 326–336. [http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.335.7373&rep=rep1&type=pdf](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.335.7373&rep=rep1&type=pdf)

Easterly, W. R., and Levine, R. (1997). Africa’s Growth Tragedy: Policies and ethnic divisions. The Quarterly Journal of Economics 112 (4): 1203–1250. [https://williameasterly.files.wordpress.com/2010/08/17_easterly_levine_africasgrowthtragedy_prp.pdf](https://williameasterly.files.wordpress.com/2010/08/17_easterly_levine_africasgrowthtragedy_prp.pdf)

Faia, E., Iliopulos, E. (2010). Financial Globalization, *Financial Frictions and Optimal Monetary Policy* [http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.402.9327&rep=rep1&type=pdf](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.402.9327&rep=rep1&type=pdf)

Fama, E.F. (1984). Forward and spot exchange rates. *Journal of Monetary Economics*, 14(3), 319‒338. [https://eml.berkeley.edu/~craine/EconH195/Fall_09/webpage/Fama_Forward%20Discount.pdf](https://eml.berkeley.edu/~craine/EconH195/Fall_09/webpage/Fama_Forward%20Discount.pdf)

Fischer, S. (1991). Growth, macroeconomics, and development. In NBER *Macroeconomics Annual*, 6, 329‒379. [https://www.nber.org/papers/w2453.pdf](https://www.nber.org/papers/w2453.pdf)

Fischer, S. (1992). Macroeconomic Stability and Growth. *Cuadernos de Economia* 29 (87): 171–186. [http://www.economia.uc.cl/docs/087fisca.pdf](http://www.economia.uc.cl/docs/087fisca.pdf)

Francois L. and Velere Mignon, (2008). On the Influence of Oil Prices on Economic Activity and Other Macroeconomic and Financial Variables. *Opec Energy Review*, 32. 343‒380. [http://www.blackwell-synergy.com/doi/abs/10.1111/j.1753-0237.2009.00157.x](http://www.blackwell-synergy.com/doi/abs/10.1111/j.1753-0237.2009.00157.x)

Frankel, J.A. (1979). On the theory of floating exchange rates based on real interest differentials. *The American Economic Review*, 69(4), 610–622. [https://sites.hks.harvard.edu/fs/jfrankel/On%20the%20Mark.pdf](https://sites.hks.harvard.edu/fs/jfrankel/On%20the%20Mark.pdf)

Gehrkea, B., Yaob, F. (2013). Sources of Real Exchange rate Fluctuations: The Role of Supply Shocks Revisited. Beiträge zur Jahrestagung des Vereins für Socialpolitik. [https://www.econstor.eu/bitstream/10419/101321/1/796368481.pdf](https://www.econstor.eu/bitstream/10419/101321/1/796368481.pdf)

Ghosh, S. (2011). Examining Crude Oil Price – Exchange Rate nexus for India during the period of extreme oil price volatility. *Applied Energy*, 88, 1886–1889. [https://www.researchgate.net/publication/227413396_Examining_crued_oil_price_-_Exchange_rate_nexus_for_India_during_the_period_of_extreme_oil_price_volatility](https://www.researchgate.net/publication/227413396_Examining_crued_oil_price_-_Exchange_rate_nexus_for_India_during_the_period_of_extreme_oil_price_volatility)

Goudie, W. A., & Meeks, G. (1991). The exchange rate and company failure in a macro – micro model of the UK company sector. *The Economic Journal*, 101, 444–457. [http://links.jstor.org/sici?sici=0013-0133%28199105%29101%3A406%3C444%3ATERACF%3E2.0.CO%3B2-T&origin...](http://links.jstor.org/sici?sici=0013-0133%28199105%29101%3A406%3C444%3ATERACF%3E2.0.CO%3B2-T&origin...)

Hutchison, M.M. (1993), Structural change and the macroeconomic effects of oil shocks: Empirical evidence from the United States and Japan. *Journal of International Money and Finance*, 12(6), 587 – 606. [https://www.sciencedirect.com/science/article/pii/0261560693900279](https://www.sciencedirect.com/science/article/pii/0261560693900279)
Hamilton, J. D., (1983). Oil and the Macroeconomy since World War II, *Journal of Political Economy* 91, 228 – 248. https://doi.org/10.1086/261140

Hamilton, J. D. and Herrera A. M. 2004. Oil Shocks and Aggregate Macroeconomic Behavior: The Role of Monetary Policy, *Journal of Money, Credit and Banking*, 36, 265–286. http://citeseerx.ist.psu.edu/viewdoc/download?sessionId=DD7DFA61BC6AA6B1F4F77B9BF59DF6A?doi=10.1128.5217&rep=rep1&type=pdf

Hamilton, J.D. (2008) Oil and the Macroeconomy. In: Durlauf, S. and Blume, L., Eds., *The New Palgrave Dictionary of Economics*, Palgrave MacMillan. https://econweb.ucsd.edu/~jhamilto/JDH_palgrave_oil.pdf

Hamilton, J.D. (2008), Understanding Crude oil Prices (No. W14492). National Bureau of Economic Research. *The Energy Journal*, 30(2), 179-206. https://www.nber.org/papers/w14492.pdf

Hedayeh Samavati and David Dits (2007), Petroleum Prices and their impact on Aggregate Economic Activity: Greasing the Skids? Proceedings of the Academy of Business Economics. pp. 44–52. https://www.usi.edu/media/3654832/Petroleum-Prices.pdf

Hilde C. Bjomland, (2009). Oil Price Shocks and Stock Maricet Booms in an Oil Exporting Country. *Scottish Journal of Political Economy*, 56(2), 232‒254. https://doi.org/10.1080/0003684042000281561

Hsing, Yu (2007). Impacts of Higher Crude Oil Prices and Changing Macroeconomic Conditions on Output Growth in Germany. *International Journal of Finance and Economics*, 11, 134–140. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.130.2119&rep=rep1&type=pdf

Hyder, Z., Shah, S. (2005), Exchange Rate Pass ‒ through to Domestic Prices in Pakistan No. 0510020. Econ WPA. https://econwpa.ub.uni-muenchen.de/econ-wp/mac/papers/0510/0510020.pdf

Ismihan, M. (2003), The role of politics and instability on public spending dynamics and macroeconomic performance: Theory and evidence from Turkey. Doctoral dissertation, Middle East Technical University. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.628.2598&rep=rep1&type=pdf

İménez ‒ Rodríguez, R., Sánchez, M. (2005), Oil price shocks and real GDP growth: empirical evidence for some OECD countries. *Applied economics*, 37(2), 201–228. https://doi.org/10.1080/0003684042000281561

Ito, K. (2008). Oil Price and the Russian Economy: A VEC Model Approach. *International Research Journal of Finance and Economics*. 17, 68–74. http://www.accessecon.com/pubs/EB/2008/Volume17/EB-08Q40019A.pdf

Ito, K. (2010), The impact of oil price hike on the Belarusian economy. *Transition Studies Review*, 17(1), 211–216. http://doi:10.1007/s11300-010-0140-8

Jing He, (2005). An Empirical Analysis of Macrocscopic Response to Crude Oil Price Volatility in China by Using the Input – output Models. https://www.iioa.org/conferences/15th/pdf/jinghe.pdf

Jimenez – Rodriguez, R. and Sánchez, M. (2005). Oil price shocks and real GDP growth: empirical evidence for some OECD countries. *Applied Economics*, 37, 201–228. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.165.2469&rep=rep1&type=pdf

Kaneko, T., and Lee, B. S. (1995). Relative Importance of Economic Factors in the U.S. and Japanese Stock Markets. *Journal of the Japanese and International Economies*, 9(3), 290-307. https://doi.org/10.1006/jjie.1995.1015

Khan, A.H., Qasim, M.A., Ahmad, E. (1996). Inflation in Pakistan revisited [with comments]. *The Pakistan Development Review*, 35(4), 747 – 759. http://www.pide.org.pk/pdf/PDR/1996/Volume4/747-759.pdf

Kisel'áková, D.; Šofranková, B.; Čabinová, V.; Onuferová, E. (2018). Competitiveness and sustainable growth analysis of the EU countries with the use of Global Indexes’ methodology. *Entrepreneurship and Sustainability Issues*, 5(3), 581-599. https://doi.org/10.9770/jesi.2018.5.3(13)

Lee, K., Ni, S. and Ratti, R.A. (1995). Oil shocks and the macroeconomy: the role of price Variability. *Energy Journal* 16 (4), 39–56. http://faculty.missouri.edu/~nix/papers/oil.pdf
L’Oeillet, G. and J. Licheron (2008). Oil prices and inflation in the euro area: A nonlinear and unstable relationship. (avec J. Licheron), 5èmes doctoriales MACROFI, Aix en Provence, No. halshs – 00323614. http://sceco.univ-poitiers.fr/MACROFI/DocMacrofi/D5LOeillet.pdf

Löschel, Andreas; Oberndorfer, Ulrich (2009). Oil and Unemployment in Germany, ZEW Discussion Papers, 229 (2–3), pp.146–162 No. 08–136. https://www.econstor.eu/bitstream/10419/27619/1/dp08136.pdf

Lucas R. (1988). On the mechanics of economic development. Journal of Monetary Economics 22 (1), 3–42. https://www.parisschoolofeconomics.eu/docs/darcillon-thibault/lucasmecanicseconomicgrowth.pdf

MacDonald, R., Ricci, L.A. (2004), Estimation of the equilibrium real exchange rate for South Africa. South African Journal of Economics, 72(2), 282–304. https://poseidon01.ssrn.com/delivery.php?ID=73702711100000407612607909110709506404802005003702806600004005203509709604103704611609403109011508809302502707203404906612208901010502502508306600069091114010115079029084120006023009116112081124&EXT=pdf

Marcel Gozali, (2011). Impacts of Oil Price levels and Volatility on Indonesia. Illinois Wesleyan University Undergraduate Economic Review, 7(1), Article 4, https://digitalcommons.iwu.edu/cgi/viewcontent.cgi?article=1103&context=uer

Mishenin, Y.; Koblianska, I.; Medvid, V.; Maistrenko, Y. (2018). Sustainable regional development policy formation: role of industrial ecology and logistics. Entrepreneurship and Sustainability Issues, 6(1), 329-341, https://doi.org/10.9770/jesi.2018.6.1(20)

Mohammad R.F. and Gunther M., (2008). The Effects of Oil Price Shocks on the Iranian Economy. Dresden discussion paper series in economics, No. 15/08. https://www.econstor.eu/bitstream/10419/36478/1/590264257.pdf

Mork, K., (1989). Oil shocks and the macroeconomy when prices go up and down: An extension of Hamilton's results. Journal of Political Economy, 97, 740–744. https://www.researchgate.net/publication/24108653_Oil_and_Macroeconomy_When_Prices_Go_Up_and_Down_An_Extension_o_f_Hamilton's_Results

Mundell, R. (1963), Inflation and real interest. Journal of Political Economy, 71(3), 280–283. https://doi.org/10.2307/2330359

Nagy E, M and Al ‒ Awadi, Mohammad. (2001). Oil Price Fluctuations and their Impact on the Macroeconomic Variables of Kuwait: A Case Study Using a VAR Model. Arab Planning Institute (API), Working Paper No. 9908. International Journal of Energy Research. 25. 939‒959.

Olivei, G.P. (2002), Exchange rates and the prices of manufacturing products imported into the United States. New England Economic Review, First quarter (1), 3–18. https://www.bostonfed.org/publications/new-england-economic-review/2002-issues/issue-first-quarter-2002/exchange-rates-and-the-prices-of-manufacturing-products-imported-into-the-united-states.aspx

Parveen, S., Khan, A.Q. and Ismail, M. (2012). Analysis of the factors affecting exchange rate variability in Pakistan. Academic Research International, 2(3), 670. http://iosrjournals.org/iosr-jbm/papers/Vol16-issue6/Version-2/I01662115121.pdf

Pierres, P. (1989). The Great Crash, the Oil Price Shock, and the Unit Root Hypothesis. Econometrica, 57 (6), 1361–1401. http://www.sba.muhio.edu/ijj14/672_perron89.pdf

Philip A. Olomola and Akintoye V. Adejumo, (2006). Oil Price Shock and Macroeconomic Activities in Nigeria. International Research Journal of Finance and Economics. 3. Available from https://www.researchgate.net/publication/228632000_Oil_price_shock_and_macroeconomic_activity_in_Nigeria

Rautava, J. (2004). The role of oil prices and the real exchange rate in Russia’s economy—a cointegration approach. Journal of Comparative Economics, 32(2), 315 – 327. https://mpra.ub.uni-muenchen.de/70735/3/MPRA_paper_70735.pdf

Romer P. (1986). Increasing Returns and Long – Run Growth. The Journal of Political Economy, 94. 5. (Oct., 1986), 1002-1037. https://www.parisschoolofeconomics.eu/docs/darcillon-thibault/paul-romer-increasing-returns-and-long-run-growth.pdf

Rumi M., Sanjay P. and Lurion De M. (2010). Oil Price Volatility and Stock Price Fluctuations in an Emerging market: Evidence from South Korea. Energy Economics, 33(5), 975–986. https://ecomod.net/sites/default/files/document-conference/ecomod2003/Peters.pdf
Solow (1956) A contribution to the Theory of Economic Growth. Quarterly Journal of Economics, 70 (1), 65–94. 
http://piketty.pse.ens.fr/files/Solow1956.pdf http://faculty.smu.edu/tosang/pdf/Solow_1956.pdf

Sachs, J. D. and A. M. Warner. (1997). Fundamental Sources of Long – Run Growth. The American Economic Review, 87(2), 184 – 188. 
https://www.researchgate.net/publication/51992984_Fundamental_Sources_of_Long-Run_Growth

Tian H., (2010). Effects of oil price shocks on Japan’s economy: A dosage approach. International Research Journal of Finance and Economics, 42, 63 – 73.

Tokuo I. and Hayato N. (2015). Oil Price, Exchange Rate Shock, and the Japanese Economy. The Research Institute of Economy, Trade and Industry, RIKEN Discussion Paper Series 15-E-028. 
https://pdfs.semanticscholar.org/0e89/9556407a9b96776b510ce4f498dce75d6ec3.pdf

Tobin, J. (1965), Money and economic growth. Econometrica, 33, 671–684. 
http://old.econ.ucdavis.edu/faculty/kdsalyer/LECTURES/Ecn200e/tobin_money.pdf

Tvoronavičienė, M., Razminienė K. (2017). Towards competitive regional development through clusters: approaches to their performance evaluation, Journal of Competitiveness, 9(4), 133 - 147, https://doi.org/10.7441/joc.2017.04.09

Wadhwani, B. S. (1986). Inflation, bankruptcy, Default Premia and the stock market. The Economic Journal, 96, 120–138. 
https://socionet.ru/publication.xml?h=repec:ecj:econjl:v:96:y:1986:i:381:p:120-138

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