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## Influence of macroeconomic factors on the financial market

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### ABSTRACT

Macroeconomic factors affect the economy of each country. The most influential factors are GDP, unemployment rate (positively correlated) and inflation (negatively correlated). Macroeconomic policy through their instruments affects the whole economy the country, so also the business.

**Keywords:** macroeconomics factors, indicator, GDP, unemployment rate, inflation, industrial production, stock returns, financial market

### 1. INTRODUCTION

Macroeconomic factors are major drivers of capital markets worldwide. Nevertheless, such hypothesis could not be easily proven. The variety of indicators created by diverse, international group of economic specialists is becoming wider and wider. Moreover, these indicators are not the only macroeconomic circumstances of market's fluctuations. Politics, technological development or even crowd psychology could be considered as a macro-factor

Originally, macroeconomics was a social science used for analytical purposes from the point of view of a single country. Currently however, when globalisation and digitalisation processes are stronger than ever, scientists need to take global standpoint into consideration as well.

Capital markets are particularly exposed to global macroeconomic influences. The majority of companies listed on stock exchanges are international concerns, which have

a strong impact on local communities. Such entrepreneurships also play a key role in terms of stock indices – are major gauges of every stock exchange performance.

## 2. MACROECONOMIC INDICATORS

**Table 1.** Łon’s macroeconomic research results’ summary

<b>Factor</b>	<b>Description</b>
<b>Decision regarding interest rates (increase or decrease)</b>	Łon noted negative relationship between returns and interest rates. It means that if interest rate decreases, it has a positive impact on stock returns, and vice versa.
<b>Money supply (aggregate M0)</b>	significant negative correlation has been observed in 1995-2004 period
<b>Inflation</b>	Łon investigated two types of indicators regarding inflation and their relationship with stock returns – CPI (consumer price index) and PPI (producer price index). Both analyses have provided similar results as Nelson’s and Fama’s research.
<b>FX rates</b>	Łon’ research did not provide unambiguous conclusion regarding this relationship (the investigation has been carried out in 2004). However, basic analysis of Pearson correlation ratios of USDPLN, WIG and WIG20 returns showed that Polish indices are in negative relationship with American currency

Macroeconomics is an analysis of economic processes in the large scale. One could outline three different types of research among macroeconomic science:

- Analysis of the economies – encompassing every indicator depicting the condition of a particular economy (ex. GDP, inflation, unemployment rate, retails sales, industrial production, interest rates)
- Foreign exchange market
- Commodities’ market.

The relationship between macroeconomic indicators and stock returns has been initially investigated in the second half of the seventies, when Ch. R. Nelson and E. Fama carried out their research. As Nelson states “proved the existence of negative relationship between US

stock returns and two types of inflation – expected and unexpected”. At the same time, series of research regarding macroeconomic indicators was started by E. Fama (Nobel Prize in Economic Sciences laureate in 2013). His first investigation considered inflation as well.

Fama attempted to verify, which assets provide the best security against both types of inflation. Results were similar to the Nelson’s. Additionally, in his later monographies, Fama investigated the influence of other indicators on stock returns, such as industrial production or real GDP. As Fama states “The research has proven that both factors are in statistically significant relationship with stock returns”. Moreover, similar results have been noted later by different scientists, using different econometric methods and performing their research on different markets. Complex summary of all the research regarding classic indicators has been presented by H. Wisniewski in his PhD dissertation, in which he divided all investigations that have been carried out into two groups – one including developed markets and second developing markets. What seems to be interesting is that similar factors could have different impact on stock returns depending on country of origin.

In Poland, the relationship between macroeconomics and stock returns has been deeply investigated by E. Łon in his publication from 2016. His complex analysis encompassed two sides of the problem – an influence of stock performance on economic activity and relationship between monetary circumstances (such as central bank decisions, money supply, inflation and foreign exchange rates) and Polish stock market condition.

The results are outlined below in Table 1.

The subject was also verified by Wisniewski. His analyses proved the existence of three statistically significant long-term relationships: between stock returns and 10-year bond yields (positive), industrial production (positive) and inflation (negative).

## **2. 1. EXPECTATIONS- HOW SHOULD EVERY INDICATOR INFLUENCE THE PERFORMANCE OF CAPITAL MARKET?**

First of all, it need to be identified what the expected influence of every factor on stock returns is, with a view to basic economic assumptions. The results of the analysis has been shown in a table below:

**Table 2.** Wiśniewski research results’ summary

<b>Factor</b>	<b>Potential influence on capital market returns</b>
<b>GDP</b>	GDP is an indicator of total output of the economy in particular period. Changes in GDP derive from changes in total production, investment expenditures, public expenditures and net export. If an economy is in a good state, companies look for additional financing to boost their investing activity. One of the sources of capital is stock exchange. It means that positive signals from GDP should have positive impact on shares’ returns.

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<b>Unemployment</b>	If a company invests in human capital, it means that its condition is sound. According to Yamarone “if a company anticipates increased demand on its products, it hires more personal, which effects in reduction of unemployment” (Yamarone, 56).
<b>Inflation</b>	Bearing in mind Kessel investigation, inflation could significantly reduce nominal indebtedness of particular company, what supports its operational activities. It is also worth mentioning, that inflation is strongly linked to interest rates and fiscal policy.
<b>Industrial production</b>	Increase in total production should be a positive indicator of economy’s performance. However, very high level of production could be interpreted as a turning point and result in decline of share prices.
<b>Retail sales</b>	Retail sales is basically the same indicator as industrial production but de condition of retail sector. It means that an increase of that ratio should be positively interpreted by investors.
<b>ISM/Ifo BC Index/PMI</b>	All three of the indices are economic attitude indicators – higher value of such ratios should be interpreted as the better one.

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### 2. 3. HOW MACROECONOMIC INDICATORS INFLUENCE INTERNATIONAL STOCK RETURNS?

Performed research took into consideration three markets: US (S&P500 index was used to measure particular return), Germany (DAX) and Poland (WIG), and six different macroeconomic factors: GDP, unemployment, inflation, industrial production, retail sales and local index of economic attitude. Detailed information about aforementioned ratios has been presented below:

- **GDP** – the data on GDP is published quarterly (usually with one - or two month delay to the period that particular data depicts depends on country; ex. GDP for the second quarter of 2015 was made public in the end of August 2015 in Poland and in the end of July in US).
- **Unemployment** – the rate of unemployment is made public every month, usually in the middle of the following month; author used harmonised unemployment monthly rates.
- **Inflation** – changes in consumer prices are also published also every month, but with ca. two-week delay.
- **Industrial production** – data on industrial production is production of total industry in prices from 2010 seasonally adjusted and working days adjusted (WDA).

- **Retail sales** – seasonally adjusted data on total retail sales volume in constant prices from 2010.
- **ISM/Ifo BC Index/PMI** – local economic attitude indices are: ISM for US (Institute for Supply Management Index, prototype of PMI), Ifo Business Climate Index for Germany (published by Institut für Wirtschaftsforschung (ang. Institute for Economic Research) and PMI for Poland (published by Markit)

The indicator analysis consists of three versions

- **Direct relationship analysis** – in which every stock return is linked to the value of particular indicator from the same period (ex. return from March 2015 is connected to unemployment rate noted in March 2015).
- **One-period delayed relationship analysis** – every stock return is linked to the indicator's value from the previous period (ex. return from March 2015 is connected to unemployment rate noted in February 2015); author would like to investigate if appropriate indicator possesses an ability to predict future stock returns; moreover, the macroeconomic ratios are published with significant delay, which means, that their publication may influence future periods' returns.
- **Two-period delayed relationship analysis** – every stock return is linked to the indicator's value from the prior period to the previous one (ex. return from March 2015 is linked to unemployment rate from January 2015); as all ratios are published with the delay, they may weakly influence the next period to compare with the following one (ex. if January CPI is published in the end of February, it may stronger influence March return than February return).

### 3. CONCLUSIONS

Running a business in a particular system is connected with existence continuous impact of the system on this entity. Macroeconomic policy through its monetary and budgetary instruments it affects the entire economy of the country, and therefore also on the business. This is reflected in the capital market operating in specific realities in the form of many factors affecting the level of investment risk in a given country.

Analysis of the data and literature of the subject proved the influence of macroeconomic factors on the profitability of the investment. An analysis of the impact of six major macroeconomic factors is presented (GDP, unemployment rate, inflation, industrial production, retail sales and economic attitude ratios) on international stock returns. Nevertheless, they did not give a straight answer, as were different, depending on country.

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