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Impact of Inflation on the Macroeconomic Indicators in Transition Economies

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Summary: This paper is dealing with treats of inflation in times of world financial turmoil. It examines how inflation is impacting macroeconomic factors. Is there relationship and how strong it is between inflation and economic growth, unemployment rate and other selected economic indicators?

Motivated by these questions, this paper examines the relationship between inflation and selected macroeconomic indicators: real GDP annual growth rate, privatization revenues, as part of the GDP, level of investments, unemployment rate and share of assets of foreign banks in domestic bank system by using data for 13 transition economies over the period 1993-2008. The evidence strongly supports the view that the relationship between inflation and selected macroeconomic indicators is significantly and strongly negative, observed for the region. However, for small number countries in transition there is no direct significant relationship between inflation but indirect relationship has been showed.

Key words: inflation, macroeconomic indicators, growth, correlation

Rezime: Ovaj rad opisuje pretnju inflacije u vremenu finansijske nestabilnosti. Rad istražuje kako inflacija utiče na makroekonomske faktore. Da li postoji odnos između inflacije i ekonomskog rasta, stope nezaposlenosti i ostalih ekonomskih indikatora i koliko je taj odnos jak?

Motivisan ovim pitanjima, rad opisuje odnos između inflacije i sledećih makroekonomskih indikatora: realnog godišnjeg rasta BDP-a, prihoda od privatizacije, kao dela BDP-a, nivoa investicija, stope nezaposlenosti i udela stranog bankarskog kapitala u domaćem bankarskom sistemu korišćenjem podataka za 13 ekonomija zemalja u tranziciji za period 1993-2008. Istraživanje snažno podržava tezu da je odnos između inflacije i izabranih makroekonomskih indikatora značajan i izrazito negativan. Međutim, za mali broj zemalja u tranziciji nema direktne povezanosti sa inflacijom, već je prikazana indirektna povezanost.

Key words: inflacija, makroekonomski indikatori, rast, korelacija

1. INTRODUCTION

Recent researches showed that high rates of inflation can have adverse consequences for real economic growth even in the long run. Relationship between inflation and economic growth and other macroeconomic indicators is significantly and strongly negative. The basic finding is that higher inflation goes along with a lower rate of economic growth. Moreover, the adverse effect of higher inflation on economic outcomes is quantitatively important. This pattern shows up clearly for inflation rates in excess of 15–20% annually, but cannot be isolated statistically for the more moderate experiences. However, there is no evidence in any range of a positive relation between inflation and growth. The analysis also suggests that the estimates isolate the direction of causation from inflation to growth, rather than the reverse.

Nowadays, a consensus among economists seems to be that high rates of inflation cause problems, not just for some individuals, but for aggregate economic performance. The effects of permanent increases of the inflation rate for long-run activity seem to be quite complicated. The consensus about the adverse effect of inflation on real economic growth reveals only a small part of the whole picture. Recently, extensive research has focused on the nonlinear relationship between these two variables. That is, at lower rates of inflation, the relationship is not significant or even positive, but at higher rates, inflation has a significantly negative effect on growth. Some authors (Parguez, 2008) demonstrated that a number of economies have experienced sustained inflations of 20 percent to 30 percent without suffering any apparently major adverse consequences. However, once the rate of inflation exceeds some critical level (which is estimated to be about 40 percent (Aisen & Francisco, 2007), significant declines occur in the level of real activity.

Other authors (Khan, Senhadji, & Smith, Inflation and Financial Depth, 2001) used an unbalanced panel with 140 countries over 40 years to precisely examine the nonlinear relationship between inflation and growth. The estimate of the threshold level was 1-3% for industrial countries and 11-12% for developing countries. These empirical findings do not agree with standard macroeconomic models. However, recent empirical studies suggest financial markets might be an important channel through which inflation can affect growth in a nonlinear fashion (Berglof & Bolton, 2002).

2. MOTIVATION

In this paper, we investigate the relationship between inflation rated and selected macroeconomic indicators by using data from 13 transition economies. Our focus on transition economies is motivated by three factors. First, the financial systems in that region changed dramatically in a short period of time. For example, banks were privatized, foreign ownership of banks increased, privatization level increased and inflation declined. We can investigate the effect of inflation on these dynamics. Second, many transition countries have collected and published data on real GDP annual growth rate, privatization revenues, as part of the GDP, level of investments, unemployment rate and share of assets of foreign banks in domestic bank market. Most other countries do not publish these dynamics and, if available, the data reveal only short-term credit. Third, the demand for investments in transition economies is fueled by the rapid creation of new firms and the expansion of existing firms.

The data show that inflation has significant and strongly negative impact over time reaching the structure of advanced economies in some transition countries. There are, however, substantial differences between countries in structural composition. For example, only 28.8% of share of assets of foreign banks in domestic bank market in Slovenia compared to 99% and 94.2% share of assets of foreign banks in domestic bank in Slovak Republic and Albania, respectively. There are substantial differences between countries in inflation effects on annual real GDP growth and other selected macroeconomic indicators. These differences are explained by several factors including the strength of institutions, income levels, the development of credit markets and stock markets, the transfer of ownership from the state to the private sector and inflation rate.

Inflation reduces real returns to savings and, via this mechanism, exacerbates an informational friction afflicting the financial system. This financial market friction might result credit rationing and thus limit the availability of investment capital (the level of investment) and reduce the efficiency of the allocation of savings to investment projects (the efficiency of investment), and finally adversely affect the long-run economic growth. Once inflation exceeds a certain critical level, higher rates of inflation can have the adverse consequences noted above. Models, which can successfully explain the negative and nonlinear correlation between inflation and economic performance, might differ in their sources of financial frictions and the specifications of an adverse selection problem in capital markets.

3. INFLATION AND SELECTED MACROECONOMIC INDICATORS - THEORY REVIEW

3.1 Inflation

There are various and substantially different economic theories about the relationships between economic growth, other macroeconomic indicators and inflation (Beck, Demirguc-Kunt, & Ross, 2000). Theories are useful, as they account for some observed phenomenon. Historically, in the absence of what is termed ‘persistent inflation’, the early inflation-growth theories were built on cyclical observations. Persistent inflation is regarded as a post World War II phenomenon. Before then, bouts of inflation were followed by bouts of deflation. Having showed no upward or downward trend, inflation was said to behave like a ‘lazy dog’. It stays at a particular level unless and until there is a disturbance. Thereafter, it moves to another level, at which it settles. Theory, therefore sought to account for a positive correlation between inflation and growth (Petrovic, 2011). This paper shows a critical approach on this positive-correlation-approach and presenting the negative correlation-trends in the late 20th century.

Inflation will is not only affecting individuals, but also is causing problems for the whole country economy, and even the regional economy. The main characteristics of inflation are:

- Uncertainty - if inflation keeps varying, then firms may be reluctant to invest in new plant and equipment as they may be unsure of what the government will do in the future. People also may be uncertain and reluctant to spend. Both of these factors could reduce the long-term level of economic growth (Aisen & Francisco, 2007).

- Income redistribution - many people have to live off fixed incomes, particularly those on pensions. The higher the level of inflation the less their income will be worth. This effect can also happen among people who are working, as their incomes go up either faster or slower than inflation (Cate & Franses, 2008). These effects can arbitrarily redistribute income.

According to Neo-Keynesian economic theory there are three major types of inflation:

- Demand-pull inflation - inflation due to high demand for GDP and low unemployment, also known as Phillips Curve inflation (Anderson & Ortinau, 1988).

- Cost push inflation - nowadays termed "supply shock inflation", due to an event such as a sudden increase in the price of oil.

- Built-in inflation - induced by adaptive expectations, often linked to the price/wage spiral because it involves workers trying to keep their wages up with prices and then employers passing higher costs on to consumers as higher prices as part of a vicious circle. Built-in inflation reflects events in the past, and so might be seen as hangover inflation. It is also known as "inertial" inflation, inflationary momentum, and even structural inflation (Chebat, Charlebois, & Gelinas-Chebat, 2001).

These three types of inflation can be added up at any time to get an explanation of the current inflation rate. However, over time, the first two (and the actual inflation rate) affect the amount of built-in inflation: persistently high (or low) actual inflation leads to higher (lower) built-in inflation (Vukotić, 2008).

Within the context of the triangle model, there are two main elements: movements along the Phillips Curve, for example as unemployment rates fall, encouraging greater inflation, and shifts of that curve, as when inflation rises or falls at a given unemployment rate (Barczak, Scholder, & Pilling, 1997).

A major demand-pull theory centers on the supply of money: inflation may be caused by an increase in the quantity of money in circulation relative to the ability of the economy to supply (its potential output). This has been seen most graphically when governments have financed spending in a crisis by increasing the amount of currency in circulation to avoid the result of economic collapse, sometimes during wartime conditions. This has lead to hyperinflation where prices rise at extremely high rates in short periods of time in extreme cases (Sufian, 2009).

Keynesian concept is the potential output (sometimes called the "natural gross domestic product"), a level of GDP where the economy is at its optimal level of production, given institutional and natural constraints. This level of output corresponds to the "natural" rate of unemployment or the full-employment unemployment rate (Zhao, Sinha, & Ge, 2009). In this framework, the built-in inflation rate is determined endogenously (by the normal workings of the economy):

- if GDP exceeds its potential, the theory says that, all else equal, inflation will accelerate as suppliers increase their prices and built-in inflation worsens. This causes the Phillips curve to shift in the stagflationary direction, toward greater inflation and greater unemployment (Ravid, 1996).

- if GDP falls below its potential level, all else equal inflation will decelerate as suppliers attempt to fill excess capacity, cutting prices and undermining built-in inflation: there is disinflation. This causes the Phillips curve to shift in the desired direction, toward less inflation and less unemployment (Otto, 2008).
- If GDP is equal to potential, the inflation rate will not change, as long as there are no supply shocks. In the "long run," most neo-Keynesian macroeconomists see the Phillips Curve as vertical (Blanchard & Kremer, Disorganization, 1997).

3.2 GDP and GDP growth

The principal assumption, (Kitov, A model for microeconomic and macroeconomic development, 2005), is that GDP denominated in money is the sum of all the personal incomes of all the people over 14 years of age. This statement not only formulates the income side of GDP definition but extends Walrasian equilibrium to all people above 14 years of age, with income being the only measure of the produced goods and services whatever they are. This statement unambiguously defines the upper limit to the total income (Gross Domestic Income) or GDP which can be produced by a population with a given age structure and characterized by some attained level of GDP per capita (Kitov, Modelling the average income dependence on work experience in the USA 1967 to 2002, 2005).

Per capita GDP growth rate is uniquely determined by the current distribution of the personal income which, in turn, depends on population age distribution. Integral of the product of the mean personal income and the number of people with given work experience over the work experience range gives a GDP estimate. Thus, one can assume that the numerical value of real GDP growth rate in developed countries, which are characterized by a stable economic structure, can be represented as a sum of two terms (De Haas & Van Lelyveld, 2006).

The literature, (Schargrodsky & Sturzenegger, 2000) and (Filipovic, Efekti globalne finansijske krize na finansijski sektor Srbije, 2010), also points out that the stage of transition is important, with more advanced economies having more developed financial sectors.

3.3 Privatization and privatization revenues

From the outset of the transformation of Central and Eastern Europe and the former Soviet Union from socialism to capitalism, privatization was identified as a central component of reform (Berg & Sasch, 1992). However, transition economies suffered from a paucity of domestic savings and an underdeveloped institutional framework, particularly with respect to capital markets. It was therefore realized, soon after the arrival in power of reform governments from 1989 onward, that conventional methods of privatization - by tender and through public offerings - would not always be appropriate (Blanchard, The Economics of Post-Communist Transition, 1997).

An extensive literature exists that addresses how different privatization methods may have influenced the structure of private ownership post-privatization: whether it was outsider- or insider-dominated, and whether it was concentrated or dispersed, (Filipovic &

Nikolic, Kreditna ekspanzija vs. makroekonomska (ne)stabilnost, 2008). Privatization using traditional methods of sale to the highest bidder is found typically to have led to outsider ownership, in the cases of Hungary and Estonia with a high proportion of foreign participation (Becker-Olsen, Cudmore, & Hill, 2006).

In this paper we have determined influence of the inflation on the privatization revenues level, as well, as the relationship between other selected macroeconomics indicators and privatization revenues (Jovetic & Stanisic, 2009).

3.4 Investments and investment level

When prices rise these consumers cannot buy as much as they could previously. This discourages savings due to the fact that the money is worth more presently than in the future. This expectation reduces economic growth because the economy needs a certain level of savings to finance investments which boosts economic growth (Drake, 2007). Also, inflation makes it harder for businesses to plan for the future. It is very difficult to decide how much to produce, because businesses cannot predict the demand for their product at the higher prices they will have to charge in order to cover their costs (Beck, Demirguc-Kunt, & Ross, 2000).

Investments in transition economies proved to be stable and steady, within 22-28% range. Relationship between investments level and other macroeconomic factors have been described in this paper.

3.5 Unemployment rate

Unemployment only exists because firms decide to pay a labor income which is inferior to the level that would exempt household from rationing in their long run consumption expectations (Vasković, 2007). When observed inflation and unemployment in the short term, there is a rough inverse correlation between the two. When unemployment is high, inflation is low and when inflation is high, unemployment is low. This has presented a problem to regulators who want to limit both. This relationship between inflation and unemployment is the Phillips curve. The short term Phillips curve is a declining one (Demirgüç-Kunt & Maksimovic, 1999).

The classical economists believe that there is a natural rate of unemployment, the equilibrium level of unemployment of the economy. That is the long-term Phillips curve. The results of the research and relationship between inflation and unemployment rate which are confirming this theory are given further below in the Results section (Kitov, Modelling the average income dependence on work experience in the USA 1967 to 2002, 2005).

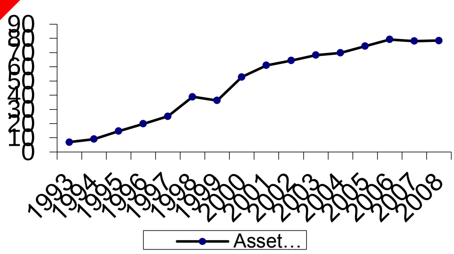
A fundamental concept in such Keynesian analysis is the relationship between inflation and unemployment, called the Phillips curve. In classical Keynesian economics this model suggested that price stability was a trade off against employment. Therefore some level of inflation could be considered desirable in order to minimize unemployment (Blanchard, The Economics of Post-Communist Transition, 1997). The Philips curve model described the US experience well in the 1960s, but failed to describe the combination of rising inflation and economic stagnation (sometimes referred to as stagflation) experienced in the 1970s. The modern use of the Phillips curve relates payroll growth to the general inflation rate (Ravid, 1996), rather than relating the unemployment rate to the inflation rate, and suggests that tradeoffs between inflation and employment are based on the change in the rate of inflation, rather than the inflation rate itself (Blanchard, Dombush, Krugman, Layard, & Summers, 1991).

In this model, increases in aggregate demand drive prices upwards, as suppliers are aware that they have pricing power, which leads to more people working, which leads to increased aggregate demand (Khan, Senhadji, & Smith, Inflation and Financial Depth, 2001). Thus, modern macroeconomics describes inflation using a Phillips curve that shifts (so the trade-off between inflation and unemployment changes) due to such matters as supply shocks and inflation becoming built into the normal workings of the economy (Naaborg, Scholtens, De Haan, Bol, & De Haas, 2003). The former refers to such events as the oil shocks of the 1970s, while the latter refers to the price/wage spiral and inflationary expectations implying that the economy suffers from inflation. Thus, the Phillips curve represents only the demand-pull component of the triangle model.

3.6 Domestic banking system and share of assets of foreign banks

Motives for foreign banks to enter domestic markets are numerous. Some of the most important (Ristic, 2006) are: gain profit, risk reduction, revamp of the investments, tax and market positioning and cost reduction and business efficiency. Some authors (Berglof & Bolton, 2002) and (Hellerstein, 1997) argue that foreign ownership leads to greater efficiency of the financial sectors in the transition countries. Foreign banks enhance transparency and corporate governance with a stronger commitment in these areas compared to domestic banks (Naaborg, Scholtens, De Haan, Bol, & De Haas, 2003). Foreign-owned banks also utilize greater risk management expertise and can diversify risk across several countries, (De Haas & Van Lelyveld, 2006). All of those contribute to greater stability of transition economies over of long-term period. However, foreign owned banks may also face difficulties gathering and evaluating information on local markets, especially in the transition countries where history data is not available for longer period (Dietrich, 2009).

Fig. 1 shows that foreign ownership of banks has increased dramatically over time across the region. There are, however, large differences across countries. Some countries privatized banks earlier than others. For example, while the government owned almost 100 percent of banks in Serbia in 1996, Latvia had privatized more than the half of the entire banking sector by 1996. By 2008, the asset share of foreign owned banks was above 75 percen in almost all transition countries, with exception of Slovenia with 29%.



Source: World databank - WDI and GDF

Figure 1 - Asset Share of Foreign Owned Banks (%)

4. ANALYSIS OF THE INFLATION – MACROECONOMIC INDICATORS RELATIONSHIP

4.1 Materials and Methods

To investigate the inflation-selected macroeconomic indicators relationship and further analyze the mechanism through which inflation affects long-run economic growth, specific data have been used. Dataset was collected based on longitudinal availability.
The dataset is based on the macroeconomic indicators and includes 13 countries, which have gone through or are still in process of transition. This dataset generally covers the period from 1993 to 2008.

The data come primarily from The European Bank for Reconstruction and Development and the World Development Indicators (WDI) database and national economic statistics sources. The dataset are consisting data for the following variables: the growth rate of the real per capita GDP based on constant local currency, inflation computed as the growth rate of the CPI index1, privatization revenues as a share of GDP, level of investments as a share of GDP and unemployment rate and share of assets of foreign banks in domestic banking system.

Table 1 presents means and medians after sorting all variables in observed period per year. The first noteworthy feature is that the average inflation rate in the first years of the period dramatically exceeds that in the rest of the sample. The second noteworthy feature is that as inflation decrease across period, the GDP growth rates tend to slowly rise. Therefore, the evidence suggests a negative correlation between inflation and the growth rate. In addition, the data strongly suggest that the inflation-growth relationship may be nonlinear.

Table 1. Macro-economic Indicator - Descriptive statistics

	Inflation (%)	GDP Growth (%)	Privatization revenues (%)	Unemployment rate (%)	Share of assets of for. Banks (%)	Investments level (%)
Mean	27.[illegible]	4.12	10.57	12.69	57.49	23.68
Median	10.80	4.70	10.65	12.59	64.40	22.95
Std. Deviation	46.26	2.21	5.91	1.29	20.93	2.08
Variance	2140.17	4.87	34.9	1.67	437.96	4.38
Minimum	4.20	-1.70	1.05	9.40	19.80	21.60
Maximum	186.30	6.90	18.50	14.50	79.30	27.60

Source: World databank - WDI and GDF

The paper investigates relationship between inflation GDP rate growth, investment/GDP, privatization revenues/GDP, Investments level, unemployment rate and foreign bank asset share.

Galton-Pearson and Spearman Correlations have been used for the analysis of the relationship between inflation and selected macroeconomic indicators.

The important point is that the inflation level decreasing from very high level to relatively low level (decrease of more than 30 times) and GDP growth rate increase only for less than 7%. Despite theoretical views there is no obvious or significant impact of inflation on investments and unemployment rate over observed period.

4.2 Results

Table 2 presents the empirical results using the Galton-Pearson Correlation two-tailed test. Correlations, which were examined, were between inflation and macroeconomic indicators. Correlation method was used because it is a technique for investigating the relationship between two quantitative, continuous variables, in this case, inflation and macroeconomic indicators. Galton-Pearson's correlation coefficient is a measure of the strength of the association between the two variables. Correlation coefficient can vary from -1 to 1. Values close or equal to -1 are indicating strong negative correlation link between the variables. We have showed that for almost all transition economies and for all observed macroeconomic indicators, per country and for region, inflation has strong negative correlation, with high significance.

Galton-Pearson Correlation two-tailed test included real GDP annual growth rate, privatization revenues, as part of the GDP, level of investments, unemployment rate and share of assets of foreign banks in domestic bank system variables.

Table 2– Macro-economic indicators: Galton-Pearson Correlations

		N	Correlation	Sig.
Pair 1	Inflation & GDP Growth	16	-.804	.000
Pair 2	Inflation & Privatization revenues	16	-.640	.008
Pair 3	Inflation & Unemployment rate	16	-.196	.466
Pair 4	Inflation & Share of assets of for. banks	13	-.778	.002
Pair 5	Inflation & Investments level	16	-.390	.135

For our analysis, we have introduced five dependent variables. Their dependence from inflation has been examined. Galton-Pearson Correlation two-tailed allows examining relationship between those variables as well and therefore to determine direct or indirect impact of inflation.

Inflation is associated with strong negative impact on the most of observed macroeconomic indicators, directly or indirectly, for all transition economies. Inflation is varying from very high values in early 1990's (over 1000% - Serbia, Bulgaria, Hungary) to EU average of 4% in 2007 and 2008. High inflation rates are negatively impacting the GDP growth rates – GDP decline, from almost to -20% in Serbia, -11% in Albania, to -6% in Romania and -2% in Lithuania. From late 1990's and onwards, inflation has stabilized on 3-5% level, which subsequently caused steady GDP growth rate of 4.5-6.5% annually.

Values of Galton-Pearson Correlation (-0.804) and significance factor (2-tailed) (0.000) are implying that there is strong negative and very significant connection between inflation and GDP growth rate on the region level. With higher inflation rates, we have lower GDP growth rates and opposite.

Table 3– Inflation – GDP Growth Spearman Correlations

		Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Ordinal by Ordinal	Spearman Correlation	-.700	.135	3.669	.003
N of Valid Cases		16			

Value of Spearman Correlation (-0.700) and significance factor (0.003) are confirming that there is a strong negative and very significant relationship between inflation and GDP growth rate.

Analyzing relationship between inflation and GDP growth separately for each country, results showed that in all countries, except in Serbia and Slovenia, there is strong negative correlation with high significance. That means that in all of these countries with lower inflation rates, GDP growth rates are higher. Relationship between inflation and GDP growth is very important, because GDP growth rate is, by many economists, rate of economic health and overall economic growth of the country.

The reasons why inflation does not affect, at least not obviously, in Serbia and Slovenia the GDP growth rate are different. Slovenian market and financial structure was as similar as in western economies from early 1990's. Slovenia fast adopted market economy and started with EU stabilization and association process. As it is with almost all western EU economies, that inflation rate has no significant influence on GDP growth rate; it is the same with Slovenian economy.

Additionally, this paper shows that low inflation rates are not influencing the GDP growth rate and with inflation rates between 5% and 8% GDP growth is stable and steady.

In case of Serbia, the main characteristics of economy in 1990's were complete economic crackdown, with hyperinflation of 300.000.000.000 monthly level and 5 x 1015 over October 1993 to January 1994 period, high level of government interventionism policy, economic sanctions, unstable political situation, huge number of refugees from FY republics and many other negative factors. Because of these reasons Serbian economy in 1990's is not a model of economy where we can expect classical economic views to be confirmed.

Strongly negative impact of inflation on the privatization revenues in transition economies region has been confirmed.

Table 4– Inflation – Privatization Spearman Correlations

		Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Ordinal by Ordinal	Spearman Correlation	-.864	.077	-6.417	.000
N of Valid Cases		16			

Values of Spearman Correlation (-0.864) and significance factor (0.000) are clearly showing that high inflation rates are impacting negatively on privatization revenues.

High inflation not only disrupts the operation of a nation's financial institutions and markets, it also discourages their integration with the rest of the worlds markets. Inflation causes uncertainty about future prices, interest rates, and exchange rates, and this in turn increases the risks among potential trade partners, discouraging trade. As far as commercial banking is concerned, it erodes the value of the depositor's savings as well as that of the bank's loans. The uncertainty associated with inflation increases the risk associated with the investment and production activity of firms and markets. Even if there is no direct and significant dependence between inflation and investments level at Galton-Pearson Correlation value -0.390 and significance factor (2-tailed) value 0.135, we can see negative correlation between two variables.

Table 5– Inflation – Investments level Spearman Correlations

		Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Ordinal by Ordinal	Spearman Correlation	-.633	.1161	-3.062	.008
N of Valid Cases		16			

The effect of inflation on investment occurs directly and indirectly. Inflation increases transactions and information costs, which directly inhibits economic development. For example, when inflation makes nominal values uncertain, investment planning becomes difficult. Individuals may be reluctant to enter into contracts when inflation cannot be predicted making relative prices uncertain. This reluctance to enter into contracts over time will inhibit investment, which will affect economic growth. In this case inflation will inhibit investment and could result in financial recession, [19]. In an inflationary environment intermediaries will be less eager to provide long-term financing for capital formation and growth. Both lenders and borrowers will also be less willing to enter long-term contracts.

Countries, which have markets at different level of development, may have a different foreign entry impact on profitability indicators of domestic banks. Transmission effects could be more significant in countries with less-developed financial markets where development potential is higher. In longer term, with larger foreign bank participation, the banking market is going to be more efficient, although in short term foreign entry could rather push costs up in less developed markets. This is due to various investments, which are necessary to increase the competitiveness of local banks. We can conclude that the response of a domestic bank to a changing foreign participation in the market depends also on the domestic bank market share by asset volumes. The larger the bank, the slower it can respond to changes.

Values of Galton-Pearson Correlation (-0.778) and significance factor (2-tailed) (0.002) are showing that there is strong negative and very significant connection between inflation and foreign bank asset share in domestic bank systems on the region level. With lower inflation rates, we have higher foreign bank asset share.

Table 6– Inflation – Share of Assets of Foreign Banks Spearman Correlations

		Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Ordinal by Ordinal	Spearman Correlation	-.801	.144	-4.431	.001
N of Valid Cases		13			

The relationship between inflation and unemployment rate confirmed the classical economic view, that the long-term Phillips curve is vertical because there inflation is not related to unemployment in the long-term. Unemployment, therefore, is at a given level, no matter at what point inflation is at. In the classical view, the point where the short-term Phillips curve intersects the long-term Phillips curve is the expected inflation. To the left side of that point, actual inflation is higher than expected and to the right, actual inflation is lower than expected.

Table 7– Inflation – Unemployment rate Spearman Correlations

		Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Ordinal by Ordinal	Spearman Correlation	-.140	.274	-.529	.605
N of Valid Cases		16			

There is no significant impact of inflation on unemployment rate, which is confirming classical theoretical views.

Basically, unemployment below natural unemployment leads to inflation higher than expected and unemployment higher than natural unemployment leads to inflation lower than expected. In this case, for the transition economies region, long-term, there is no significant relation between inflation and unemployment rate.

Results of the correlation analysis are showing that inflation is negatively correlated with privatization revenues and investment level, as well as with asset share of the foreign banks in domestic banking system.

Table 8. represents effects of the inflation on the selected macroeconomic indicators by using Pooled OLS regression, where inflation is independent variable.

Table 8- Macro-economic indicators - Pooled OLS Regression

	GDP	Privatization revenues	Investment	Unemployment rate	Share of assets of foreign banks
Constant	4.890	11.499	24.771	14.010	63.272
Inflation	-0.013***	-.012	-.019***	.001	-.648***
	(-3.905)	(-1.460)	(-3.522)	(.097)	(-5.[illegible]35)
R2	.084	.013	.072	.000	.141
Sig level: * level 0.10, ** level 0.05, *** level 0.01					
t-statistic in brackets					

The most of the regression parameters confirmed expectations on the negative sign mark of inflation influence. As proof, the most regressions showed in the table 8. dependent variables are streaming to have expected sign mark, but on different significance level. Variables: annual rate of the GDP growth, investments level, asset share of the foreign banks in domestic banking system represent statistically significant parameters on 0.01 significance level, which is proof of strong negative impact of inflation on these indicators in countries in scope. .

The effect of the inflation on privatization revenues also has expected sign mark, but it is not statistically significant. Regression results are confirming hypothesis that long-term inflation doesn't have impact on employment rate, which is concluded in Felps and Friedman research. The relationship between inflation and unemployment rate confirmed the classical economic view, that the long-term Phillips curve is vertical because there inflation is not related to unemployment in the long-term. Unemployment, therefore, is at a given level, no matter at what point inflation is at. In this case, for the transition economies region, long-term there is no significant relation between inflation and unemployment rate.

5. CONCLUSION

The empirical results reported in this paper strongly support the notion of existing relationships between inflation and growth and between inflation and some macroeconomic indicators and provide support for the view taken in this paper that financial markets are an important channel through which inflation affects growth in transition economies. This paper confirmed several classical theories on relationship between inflation and GDP growth rate, between inflation and unemployment and opposed indirectly to the classical views between inflation and investments. Some of the reasons might be the research sample of transition economies, which have specific and drastically changeable behavior over long-term.

Some of the reasons might be the research sample of transition economies, which have specific and drastically changeable behavior over long-term. Based on the results we can conclude that inflation negatively affects almost all selected variables.

Nevertheless, Pooled OLS regression is the simplest approach to disregard the space and time dimensions of the pooled data so the results of regression should be taken with caution. Also there are many interesting questions remain. Perhaps the most pressing is the question of the exact rate at which inflation becomes destructive. The theories suggest that at extremely low rates, inflation is actually beneficial and can lead to expanded economic activity. However, at some critical point, fortunes reverse and further inflation begins to adversely affect the banking sector, investment, and real economic activity which imply using nonlinear models in testing effects of inflation especially on GDP.

Based on the results we can conclude that inflation directly strongly and negatively affects GDP growth rate, privatization revenues and on share of asset of foreign banks in domestic banking system.

Depending on different factors, such as: financial market composition, market openness, rule-of-law, level of institutional development, political stability in transition countries, their economies have different structure. This paper gave contribution on understanding specific conditions in some transition economies and impact of the inflation on the macroeconomic indicators. It deals with transition economies, which by structure, are fitting within "normal" economic standings, but also with those that are not having normal financial market behavior or structure. The important contribution is result of the relationship between inflation and GDP growth rate in transition economies, since the GDP growth rate is the most important indicator of economic health. If GDP is growing, so will business, jobs and personal income. If GDP is slowing down, then businesses will hold off investing in new purchases and hiring new employees, waiting to see if the economy will improve.

The world has seen a dramatic decline in inflation rates in recent decades. But if these theories are correct, and inflation affects economic growth by adversely affecting credit markets and credit institutions, concerns about inflation may still be warranted, especially in some countries. That is because theories predict that inflation above some moderate amount can harm the banking sector, and in turn, economic growth.

Many interesting questions remain. Perhaps the most pressing is the question of the exact rate at which inflation becomes destructive. The theories suggest that at extremely low rates, inflation is actually beneficial and can lead to expanded economic activity. However, at some critical point, fortunes reverse and further inflation begins to adversely affect the banking sector, investment, and real economic activity. Although our results suggest that the critical point lies at a fairly modest inflation rate, somewhere around 5 percent, more research is needed to pin down the exact point. What sort of effect, for example, will an increase in the inflation rate from 2 percent to 3 percent have on the performance of the banking sector? Such rates of inflation are relevant since they are in the realm of inflation targets in many countries.

There are various ways to build on this analysis. Future research can explore in more detail the effect of banking sector competition. Future research can investigate the role of state owned versus private banks in broader samples and their effect on inflation. The "developmental view" argues that government banks increase the provision of long-term financing in strategic areas. This can reduce inflation and increase GDP growth long term. Our results suggest that private banks accomplish this task more effectively.

Further results of this research are highlighting importance of keeping inflation on low levels. This paper can be used as base for monetary policy makers in transition economies to deal with inflation related problems.

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