STATISTICAL INDICATORS WHICH CAN BE RELEVANT FOR THE STUDY OF BUSINESS FLUCTUATIONS: A FEW EXAMPLES BASED ON THE ROMANIAN ECONOMY

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Abstract. *Numerous economists attempted to offer different explanations for the occurrence of business cycles. However, we argue that the most consistent from an economic perspective is the so-called „circulation credit theory of the business cycle". If booms and busts are the effects of monetary causes, the question we would like to address is whether there are any statistical indicators that can be used as proxies to illustrate macroeconomic tendencies. Proposed indicators include, but are not limited to, GDP, the reference interest rate and the intermediary money supply (M2). Statistical data concerning the Romanian economy will be collected and used in order to formulate policy suggestions.*

Keywords: *business cycles; the circulation credit theory of the trade cycle; the reference interest rate; monetary aggregates.*

Introduction

Business fluctuations are among the most interesting, and relevant topics, in the field of economic research. Given the importance of this particular subject, it is to a certain degree understandable, that dissent will continue to persist between economists relating to the causes that determine business fluctuations. However, the main purpose of the present paper will not be to demonstrate that the theory that we hold on to, namely the *„circulation credit theory of the business cycle"* is the correct one. That has been done in numerous other papers (Apăvăloaei, 2015; Pătruți, 2016). What we do aim at is to show that there are a number of statistical indicators which can be used to illustrate the aforementioned theory. It is indeed highly debatable whether the indicators can be used to "predict" future fluctuations. However, they can provide both researchers and policymakers with valuable information concerning the *present* state of the economy. The main statistical indicators that we will employ will be used to describe some broad categories, such as the money supply (M1, M2), the interest rate (the reference interest rate), different variations in price levels (CPI, PPI) and aggregated output (GDP, GDP growth).

The circulation credit theory in brief (literature review)

The circulation credit theory is usually associated (in one of its earliest forms) with the writings of the so-called British Currency School, in their famous controversy with the Banking School (Viner, 1965). Their main point was that an increase in the supply of money in a society brings with it negative consequences for the economy, namely price inflation. The currency school was so influent in the 19th century, that in 1844 an act was adopted under the government of Robert Peel (De Soto, 2006). This act severely limited the capacity of banks to issue new banknotes, in the attempt to keep a constant supply of money and to stop any monetary increases in prices.

However, it was only under the hands of the two renowned Austrians economists, Ludwig von Mises (1953) and Friedrich von Hayek (2008), that the circulating credit theory achieved its most elaborate form. By complementing the quantity theory of money with the subtle interest rate analysis made by the Swedish economist Knut Wicksell (1989), the Austrian school of economics managed to explain business cycles as direct consequences of fractional reserve banking, that expands circulation credit by creating bank deposits subject to check in excess of available reserves (Mises, 2008, p. 569), and of monetary interventions, which exacerbates circulation credit creation by limiting competition between banks and by creating moral hazard. More specifically, due to inflationary government intervention, interest rates are kept artificially low in order to stimulate credit (Strigl, 1934; Mises, 1998; Hayek, 2008). This cheap money policy diverts resources away from existing (productive!) industries, modifying the current structure of production (Hayek, 2008). Generally, resources are drawn away from consumer goods industries, and their immediate suppliers, towards industries that are further away from the final consumer (i.e. capital goods industries).

If the circulation credit theory holds[1], then every economic boom must be accompanied by an increase in the money supply and a decrease in the interest rate and every bust must be accompanied by the opposite – namely an increase in the interest rate and a decrease in the growth of credit. During the boom phase of the cycle, artificially lowered interest rates lead to both longer investment projects and to increasing levels of consumption. It should be noted that the circulation credit theory of the business cycle is not an "overinvestment" based explanation, but one that emphasizes the distorting effect of lower interest rates upon entrepreneurial investment decisions (by altering monetary calculation it leads to malinvestments and capital consumption), which are concomitantly coupled with higher levels of consumption. These two opposing forces (more roundabout investment projects and higher consumption) must invariably lead to a tension in real resources, and therefore to an inevitable bust.

We also point out a more subtle aspect of the circulation credit theory, namely that generally producer prices are expected to vary to a greater degree than (and correspondingly prior to) consumer prices (Mises, 1998; Hayek, 2008). These are the main theoretical propositions that we will further try to illustrate empirically. It is not necessary, in our opinion to use complex statistical and econometric methodologies to prove our main point. Analyzing time series with the use of charts and graphs will be sufficient in this case to illustrate our theoretical propositions.

[1] It is equally correct to refer to this theory as Austrian business cycle theory (usually abbreviated ABC theory). From now on in the present paper the two denominations will be used interchangeably.

Analyzing the Romanian economy

As mentioned earlier, the main purpose of the present analysis will be to see whether statistical indicators can give us valuable information concerning the state of the Romanian economy. Of course, the same analysis can be applied in principle to any country with the aim of illustrating the occurrence and dynamics of general business cycles. We would like to point out that in order to gather empirical information about economic fluctuations at a particular point in time, both researchers and policy makers should pay attention to specific monetary variables such as the money supply, the interest rate and the variations in price levels. They can then attempt to deduce and illustrate the impact of these pecuniary factors on the real economy. A subsection will be dedicated to each of the three phenomena.

The time period under consideration is roughly between 2005 and 2015, thus including an economic boom (2005-2008), the corresponding depression (2009-2011) and what appears to be the early signs of an incipient boom phase (2011-present). It will further be shown that the Romanian economy has a few interesting particularities, that need to be interpreted correctly in order to understand the current situation (and possibly to anticipate future events).

The money supply

We mentioned earlier that according to the theory, every boom must be inflationary in nature. It stems from monetary creation, which in turn can translate into price inflation, the extent, and timing of which varies from one particular (historical) situation to another. Thus, in parallel with an increase in GDP growth, there must be a corresponding increase in the stock of money[2]. In order to approximate the quantity of money in the Romanian economy, we will use M2 – or what economists usually call the *intermediary money supply*. M2 contains the monetary base M1 (which includes coins, banknotes, and deposits which are convertible on demand) plus time deposits with a maturity of fewer than 2 years (National Bank of Romania, 2016).

Given the fact that economic booms are usually defined as periods of increasing prosperity[3], statisticians generally use GDP growth to determine the phase of the cycle a country is in. Let us take Romania for example. Figure 1 below shows the GDP growth in Romania from 2005 until 2015.

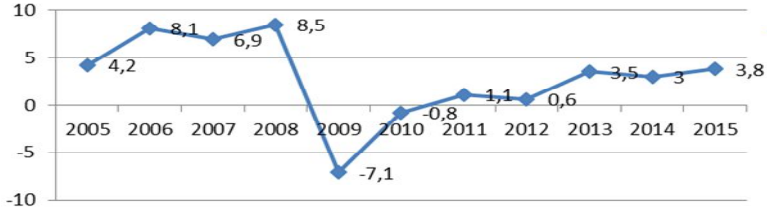

Figure 1. GDP Growth (Eurostat)

[2] It is indeed true that measurement of GDP growth can almost totally fall prey to inflation. More specifically, it is possible for a country to encounter a situation in which the allegedly growth in GPD is strictly due to the increase in monetary stock. Adjusting GDP growth with variations in the Consumer Price Index does not (completely) alleviate the monetary effects of inflation. However, it is not the role of the present paper to explore the limits of macroeconomic variables. For such a critic and alternatives to GDP calculation, see De Soto (Money, Bank Credit and Economic Cycles, 2006).

[3] Of course, if ABC theory is correct, booms only create the *illusion* of prosperity (Pătruți, 2016).

It is easy to observe that, if we consider that variation in GDP reflects variations in a country's prosperity, Romania entered in the upward trend of the cycle in 2005, with rates of growth which culminated with a figure of 8.5 percent in 2008. The year 2009 market the beginning of the crisis, with an equally impressive *drop* in GDP of approximately 7 percent. The depression persisted until the end of 2010, while 2011 and 2012 saw meager rates of growth. It was not until 2013 when the Romanian economy started to increase at a steady rate of a little over 3 percent for the next 3 years.

However, what we are interested in is to see whether the 2005-2008 boom was sustainable (based on an increase in capital and a corresponding increase in productivity) or was it an artificial "overheating" of the economy based on inflationary credit. This question is relatively easy to answer if we take a look at the variation in the intermediary money supply M2. Figure 2 pictures the percentage increase in M2 from one year to another for the period 2006 to 2016 Romania.

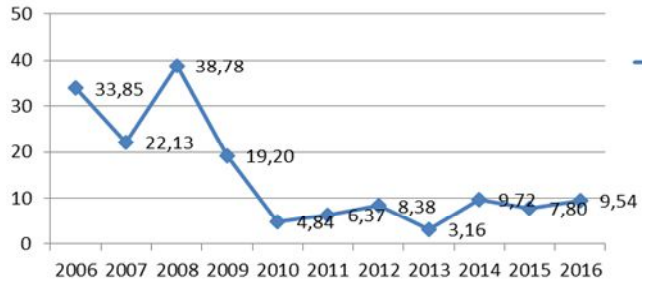

Figure 2. YoY percentage increase in M2 (NBR)

By studying the graph one can clearly point out to the fact that the ascending phase of the cycle in Romania was inflationary in nature. The authorities increased to money supply with approximately 30 percent in 2006, 20 percent in 2007 and 40 percent in 2008. The stock of money nearly doubled in a three year period. The corresponding increase in prices (and the corresponding increase in payments to the factors of production) generated the *illusion* of a robust rise in the general prosperity of the country. From 2010 onwards, the rise in the money supply from one year to another was only moderate and did not surpass the 10 percent limit.

The interest rate

A business cycle analysis without a corresponding historical study of the interest rate would entirely miss its own point. If prices in general transfer knowledge (Hayek F. A., 1945), then the interest rate is the main price which gives entrepreneurs information regarding the amount of saved resources (Strigl, 1934). A low-interest rate means that saved resources (capital) are abundant, while a high-interest rate signifies a scarcity of saved resources.

However, the money market today is heavily regulated and government intervention makes it possible for the market interest rate to permanently deviate from its equilibrium position. One way in which the monetary authorities influence the price of money is through the reference interest rate. Figure 3 shows how this indicator fluctuated between 2007 and 2016.

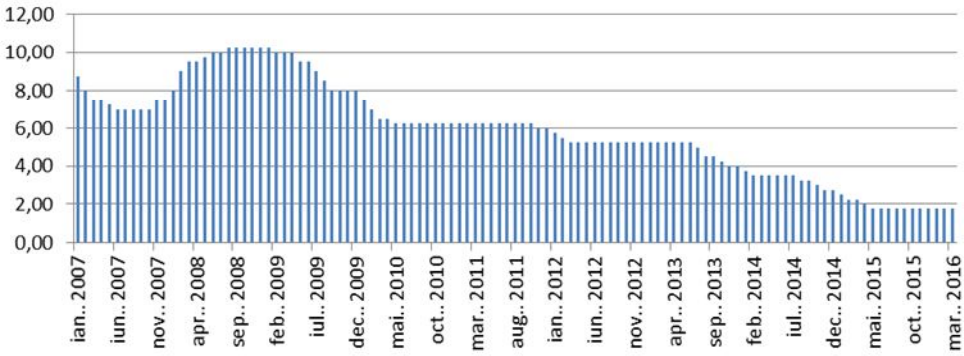

Figure 3. Evolution of the Reference Interest Rate (NBR)

It is not complicated to observe that the crisis was triggered at the end of 2008 when monetary authorities decided to increase the reference interest rate at a record high level of 10.25 percent. After the Romanian economy fell into a recession due to the (necessary) credit contraction, until this day the authorities have been desperately decreasing the reference interest rate in the attempt to "jumpstart" the economy. This indicator has reached a historically low level of 1.75 percent in the present (may 2016). Minimum reserves requirements have also been continuously relaxed, currently reaching a historical low, namely at 8 percent for RON and 12 percent for foreign currencies.

After observing the sustained effort undertaken by the monetary authorities to encourage bank lending, one may be puzzled by the fact that the Romanian economy is not in a new inflationary boom, similar to the one in 2006-2008. One reason can be the fact that entrepreneurs and households are rather prudent when it comes to contracting new loans, particularly due to *regime uncertainty* (Higgs, 1997) i.e. frequent regulation and fiscal changes, international slowdown and unorthodox monetary policies, and to the entrepreneurs' temporary loss of confidence in their ability to forecast future market conditions and in the reliability of monetary calculation (Salerno, 2012).

At the same time, the two deterring elements mentioned above, regime uncertainty and temporary confidence loss, also plague the banking system. Lending institutions have practiced a rather conservative lending policy, despite their increased level of liquidities. As can be observed in Figure 4, the interbank lending rate is at a historical low, even when compared to pre-crisis levels. The ROBOR has even entered negative territory if one takes inflation into account, with 2010-2011 witnessing negative real interest rates. But even under these circumstances, lending increased only slowly. This was mainly due to a high degree of non-performing loans, which are the symptom of the late 2000s boom years and which have recently entered the attention of the NBR, and legislative initiatives like the "walk away from law"[4].

[4] On April 28th, the mortgage walk bill was signed into law. Despite raising the opposition of the banking sector and of the NBR, the bill was passed by the Romanian Parliament, after some modifications prompted by an initial veto from the president, and then signed into law. This piece of legislation allows debtors to give up the real estate property that was backing up the mortgage loan they contracted, while forcing the bank to accept it as payment. The law applies only to residential loans, has an upper bound cap of 250,000 euros, and excludes mortgage loans for first time buyers that were guaranteed by a state program. The walk away bill has increased the uncertainty

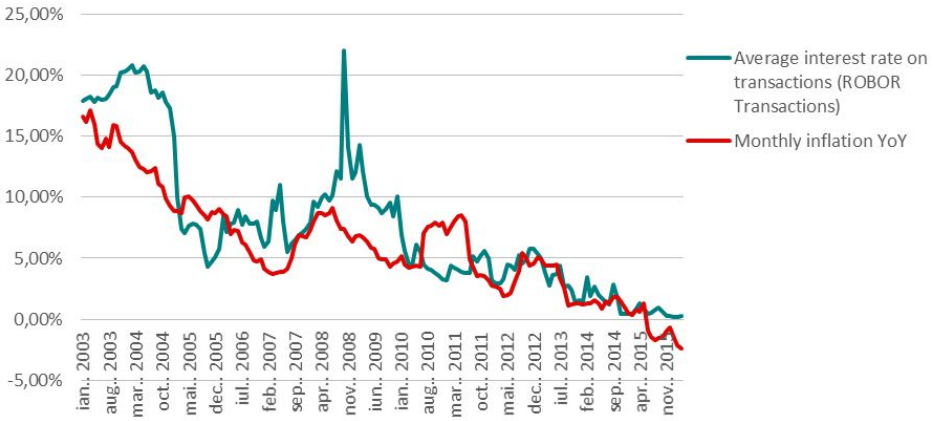

Figure 4. Evolution of the interbank interest rate and inflation (NBR)

The banking sector seems to have re-entered a growing phase since the second half of 2015, with the volume of loans reaching two-digit growth levels when looking at loans denominated in local currency. Figure 5 clearly shows that overall loan figures, which include foreign currency denominated loans, can prove deceivingly calm in comparison to loans contracted in RON, which increased by 18 percent in April 2016, as compared with previous year figures.

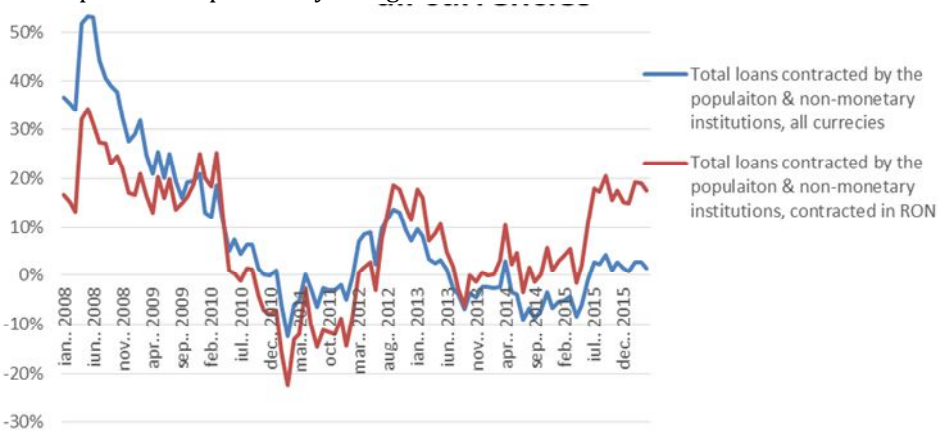

Figure 5. YoY figures for loans denominated in all currencies and those denominated only in RON (NBR)

Banks seem to have followed the trend imposed by the central bank. Figure 6 graphically illustrates the evolution of the lending interest rate of commercial banks in Romania.

associated with contracting a housing loan (especially because the law is retroactive), while also increasing the risk premiums charged by the banks (i.e. the initial contribution required from the lender when contracting a housing loan).

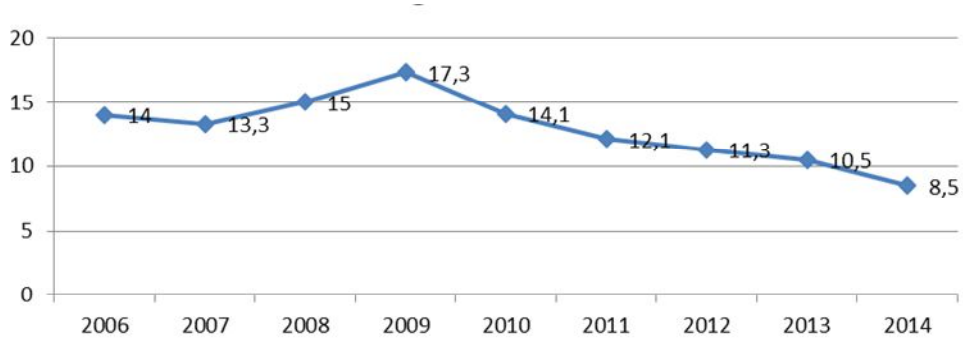

Figure 6. Evolution of the Lending Interest Rates (World Bank)

We can see that the interest rate practiced by commercial banks for short and medium-term credits are considerably above the levels of the reference interest rate. But even so, credit is cheaper now than in the previous boom period (2006-2008), so there are good reasons to suspect that a new upward phase is an incipient. This assertion can be further substantiated if one takes into consideration the evolution that characterized the 2005-2008 boom years and the following policies that were implemented in order to combat the effects of the bust.

According to the circulation credit theory of the business cycle, the bust necessary follows the boom period, but the best remedy to make the contraction period as short as possible, and the only method of resetting the economy and its production structure on a sustainable path, is for the public authorities to abstain from any tampering with the market. Any attempt to boost aggregate demand, or to avoid the deflationist pressure that follows the rising demand for money, can only redistribute resources (not create them) while sewing the seeds for more malinvestment and exacerbating uncertainty (Rothbard, 2000). But during the Great Recession, policymakers considered such *laissez-faire* remedies to be too drastic, therefore opting for Keynesian and monetarist schemes. Romania was no exception: the country witnessed tax hikes, increases in the money supply, the introduction of new legislation, international bailouts, and special access to resources and guarantees for certain sectors. One such sector was represented by real estate, the sector that bubbled over in 2008, and that was never allowed to fully adjust after the bust. Easy money policies, coupled with state-backed guarantees ("*Prima casa*" program started in 2009) and pro-debtor legislation (conversion of foreign currency loans and the walk away legislation) have hampered the restructuring of the market, mainly in the direction of propping up housing prices and keeping mortgage-backed loans at low-interest rates. Given these particular circumstances, we can expect that during the next boom and the following contraction, the real estate market is going to play a central role in next cyclical debacle that is currently beginning its upward phase. Without attempting to go into an analysis pertaining to real estate volumes and values, especially given the specificities of this location dependent market *par excellence,* we are simply going to point to the evolution of loans contracted for real estate purposes in order to support our argument.

As it can be observed in Figure 7, the loan structure of the credits contracted by households has changed substantially over the years, as real estate loans grew in share from approximately 20 percent of the total loans contracted by households, to some 48 percent by the end of 2015.

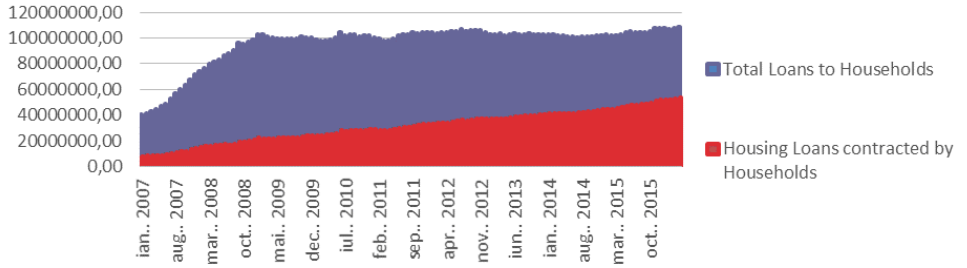

Figure 7. Loan structure for credits contracted by households (NBR)

Another indication of a new emerging bubble in real estate can be observed by looking at the yearly evolution of loans contracted by households for housing purposes. As Figure 8 indicates, RON-denominated housing loans have accelerated to levels well above those incurred overall by households (in foreign and RON currencies). Currently, housing loans denominated in RON represent 10 percent of the entire lending that is contracted exclusively in local currency. Although this figure does not seem to be too large when taken alone, one must note that at the end of 2007, the same figure was only 1 percent.

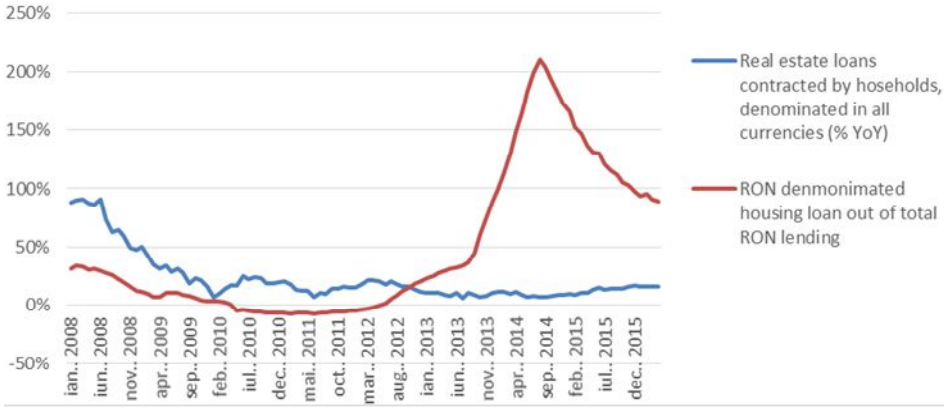

***Figure 8. YoY figures for housing loans denominated in all currencies and those denominated only in RON* (NBR)**

Let us now move forward to the next phase of the analysis, namely the evolution of price levels.

Evolution in price levels

In most historical instances of the business cycles, we can observe that prices of production goods usually fluctuate stronger and prior to the prices of consumer goods, when the money supply is increased. The easiest way to make this comparison is to look at the evolution of statistical price indexes. In this case, we studied variations in the producer price index in parallel with variation in the consumers' price index (CPI) in Romania between 2005 and 2015. Figure 9 depicts the data.

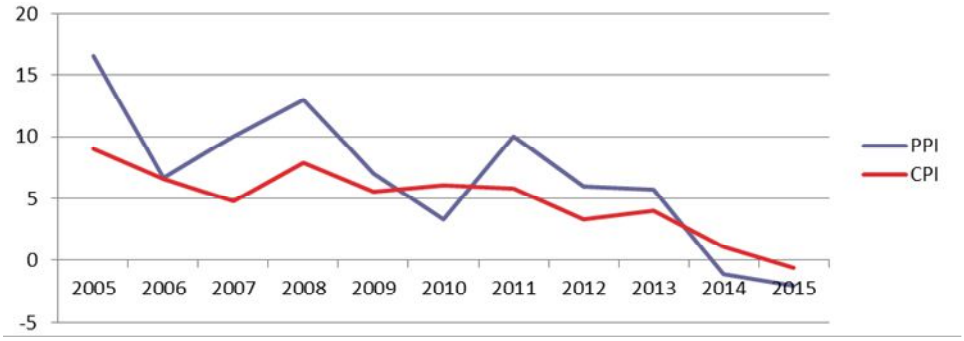

Figure 9. Comparative evolution of PPI and CPI (Eurostat, NBR)

In this case, advanced statistical regression and correlation methodology is unnecessary to realize that the two trend lines are indeed correlated. The evolution of the PPI anticipates the evolution of the CPI. Also, we can observe that the PPI varies to a greater degree than the CPI, illustrating the theoretical premise that an increase in the monetary stock first affects the higher levels of the production structure, namely the prices of capital goods which are more remote from the final consumer.

There is only one problem which arouses our interest. In 2015, both the IPP and the IPC registered negative values, which suggest that the economy has reached a deflationary state. However, this is relatively strange given the fact that there was an *increase* in M2 from 2014 to 2015 of approximately 7.8 percent[5]. Although the increase was modest when compared to pre-crisis levels, it is hard to justify that coexistence of more money in the economy and generally lower prices. This fact seems to fly in the face of *the quantity theory of money*[6], namely that an increase in the total quantity of money leads to *ceteris paribus* higher prices. A hypothetical rise in the demand for money could have overcompensated the increase in money supply. This is not hard to grasp, given the uncertain business and legislative environment that has characterized the Romanian economy since the 2008 bust. But even if this were the case, the demand for money cannot remain high for an indefinite time horizon. Consumer expectations are going to adapt and incorporate the falling purchasing power of the currency in their decision to hold money. Both the NBR and the IMF have already noted that monetary policy will have to be carefully monitored and prepared for a transition to a tighter monetary stance (IMF, 2016a), given forecasts of CORE2 inflation for 2017.

Although we understand the limits of the quantity theory of money, especially its mechanistic bias that ignores human action, in the following graph we attempt to provide a visual representation of the current decoupling of consumers' inflation expectations, as reflected by the actual CPI figures, and the M1 monetary aggregate

[5] It is true on the other hand that a longer term view, like for example between January 2007 and January 2016, indicates a 167 percent increase of M2.

[6] The quantity theory of money suggests that variations in the quantity of money will lead to a similar variations (whether proportional or not) in the price level of that economy. One of its more primitive version would be Fisher's (1913) renown equation M V = P Q.

divided by real GDP figures. Theoretically, the two sides of the equation of exchange should be equal. The balancing element is made out of *v*, the velocity of money, or the number of transactions each monetary unit intermediates. In our calculations, we have assumed *v* to constant, thus eliminating it from our calculations. Therefore, any difference between increases of *M/Q* and those of *P* are going to be made up for in the future through the decisions of economic agents to hold on to a certain quantity of money.

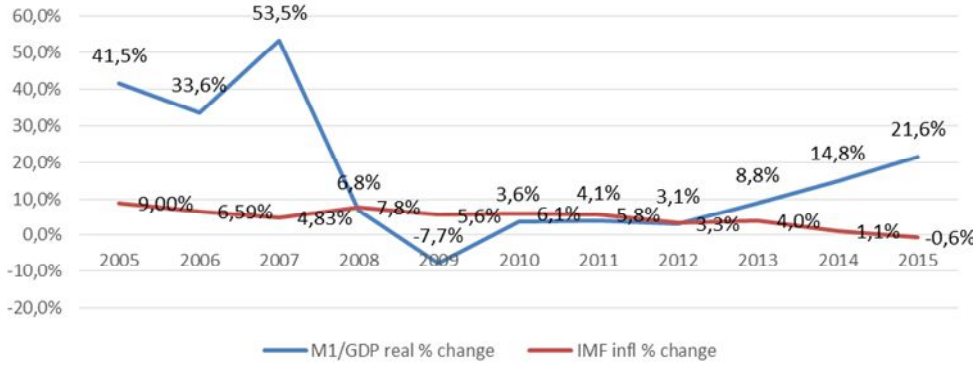

Figure 10. Unanticipated monetary increase in inflation rate (Eurostat, NBR, IMF)

As Figure 10 above indicates, boom phases witness a temporary decoupling of inflation expectations, as indicated by actual consumer price inflation, from money supply divided by real output. The wedge between the two lines that depict the two indicators was noticeable at the end on 2012, the first year after the crisis that witnessed a pickup in lending. Therefore, the decoupling of the two lines appeared before the current disinflation period that was brought about by fiscal easing and a boom in raw materials output in international markets. In this context, the IMF has already cautioned the Romanian authorities in matters concerning the pickup in inflation, another symptom of which can be found in the wage increases that are faster than productivity gains (IMF, 2016b). See figure 11 below.

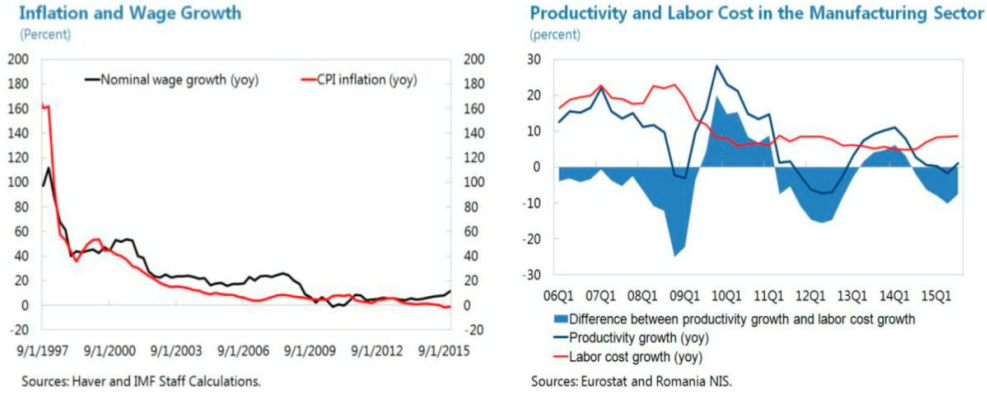

Figure 11. Wage increases outpace productivity (IMF Staff Report)

Conclusion

As we have shown in the present article, one can use statistical indicators to illustrate the circulation credit theory of the business cycle and also to gather relevant information that allows us to make informed judgments regarding the phase of the business cycle that characterizes the *status quo.* The main indicators that were employed in the present analysis are those describing the historic evolution of the money supply, interest rates, and prices.

Although the last boom-bust cycle in Romania is vividly illustrated by the above-mentioned cycle theory, the present situation appears, at first sight, to be somewhat more complex. We are presently witnessing a period of economic growth, coupled with a moderate increase in the money supply and price deflation (as reflected by the evolutions in CPI and PPI).

The explanation we have advanced for this outcome is based, on the one hand, on the fact that the demand for money has over-compensated the increased money supply. Due to regime uncertainty and temporary loss of confidence in forecasting and monetary calculation, both banks and entrepreneurs appear to have become prudent with regard to contracting new loans, in spite of the efforts made by authorities to boost credit. On the other hand, high government intervention in the housing market and the increase in real estate loans contracted by the households seem to be pulling in the opposite direction, shaking the stability of this sector, which will most probably play a major role in the next economic crisis.

In spite of the statistically measured decrease in the level of prices and to the somewhat moderate increase in the money supply, early signs of an incipient boom can be observed. One need only to take a closer look at the national currency denominated loans and consider the effects of public policy measures aimed at propping up the housing market. As we have shown above, monetary authorities appear determined to spare no effort in the attempt to "jumpstart" the economy, the consequences of which are beginning to become manifest.

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