THE ASSET PRICE CHANNEL AND ITS ROLE IN MONETARY POLICY TRANSMISSION

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Abstract: *This paper addresses the subject of the monetary policy transmission mechanism by focusing on the asset price channel, which is the monetary transmission channel responsible for the propagation of the effects induced by the monetary policy decisions made by the central bank that affect the price of assets. We will analyze the asset price channel by taking a close look at its structure, internal processes and the way it delivers monetary policy throughout the economy, ultimately influencing key variables such as the unemployment rate and the levels of consumption and production. After an introduction dealing with the entire monetary transmission mechanism, its role and purposes, we will focus on the particularities of the asset price channel and the two main ways in which it delivers monetary policy decision effects: through changes in Tobin's q value, which is the ratio between the market value of a given company and its replacement cost of capital, and through the effect of wealth, both of financial and housing nature, on consumption. In our study, we will consider theoretical aspects and observations, but also empirical evidence that highlights that the exact way in which the asset price channel functions may differ from one economy to another due to differences in the structures of the respective economies and differences in psychology and cultural values of consumers. The deep understanding of the asset price transmission channel is very important for any central bank, as this is the channel that governs key aspects of monetary policy transmission linked to the market value of assets and individual wealth. These values have, as we will see in more detail throughout the paper, an important impact on both consumption and investment, two economic actions that can help the economy, but can also prove to be a crucial element in starting and perpetuating an economic crisis.*

Keywords: monetary transmission; asset price channel.

JEL classification: E52; E59.

1. Introduction

The monetary policy transmission mechanism is defined in several ways, which we hold as being complementary. Taylor (1995: 11) describes the monetary policy transmission mechanism by assimilating it with the process through which monetary policy decisions are being transmitted, inducing effects on the real gross domestic product (GDP) and inflation, while Ireland (2005: 1) defines it by referring to the fact that "policy-induced changes in the nominal money stock or the short-term nominal interest rate impact real variables such as aggregate output and employment". According to the the Boston Federal Reserve, the monetary policy transmission mechanism is composed of a series of channels that transmit monetary policy decisions through a cause-effect function navigating through the variables of interest

rates, exchange rates, equity prices, real estate prices, bank lending, and firm balance sheets. In this way, the central bank's monetary policy decisions are being distributed in the economy, affecting characteristics like consumption and investment levels, employment and ultimately the price level. The deep understanding of the way in which these channels work is crucial in ensuring the development of efficient and effective monetary policy. This however may prove itself to be a very complex undertaking. Besides the structural changes that come up in the system, and whose nature, magnitude and direction can be exactly known only after at least some of the effects are already in place, there are also some factors that are acting simultaneously and on a constant basis, like external shocks, technical evolution effects and changes in the structure of the economy. These factors continuously alter the relationships that are established between the different elements that make up the economy. This state of fact transforms the study of the monetary policy transmission mechanism in an activity that requires continuous adaptation to new realities within the economic system and a flexible approach on the subject.

Between the different elements of the monetary policy transmission mechanism operate complex interdependencies which create a domino effect, as changes that come up in one compartment reflect in others until they influence the ultimate variable: the price level.

The mechanism is made up of five different channels through which monetary policy decisions are delivered to the economy, affecting its different components with distinct intensities and speeds. The characteristics of each transmission channel are determined by the structural reality that governs each economy, so the exact way in which these channels function differs from one case to another.

The five channels of the monetary policy transmission mechanism are (Loayza, Schmidt-Hebbel, 2002: 4-6):

- the interest rate channel
- the expectations channel
- the asset price channel
- the credit channel
- the exchange rate channel.

From these five channels, the ones that got the most attention from economic literature so far are probably the interest rate channel, the credit channel and the exchange rate channel. However, the importance of the remaining two channels, the ones that deal with expectations of both markets and individual consumers and with the function that asset prices have in transmitting policy decisions, is not to be underestimated. For this reason, the present article will be focused on the study of one of these two channels, i.e. the asset prices channel.

The analysis of the asset price channel leads to the indentication of two key components, or two distinct sub-channels, that regulate the flow of effects from the policy decision toward the final economic variables. The first such sub-channel is functioning based on the principles underlined in Tobin's q Theory (Tobin, 1969), while the second one is dealing with the way in which wealth, more precisely changes in wealth triggered by decisions of the policy makers, influences the economy. Let us address them separately.

2. Tobin's q Theory

Tobin's q Theory (Tobin, 1969), named after the economist who developed it, is centered around a variable named q, which is equal to the ratio between the market value of a given company and its replacement cost of capital. A q value greater than 1 signals the fact that the market is taking into consideration a series of assets (usually intangible) which are not reflected in the company's financial statements and is an evidence of the positive perception of the market regarding the company's capacity to generate added value. Similarly, a q value that is smaller than 1 indicates the market's lack of confidence regarding the company's ability to generate added value and, implicitly, a satisfactory financial profit.

A high value of the q variable has a positive impact on investments, as a big market capitalization with respect to the replacement cost of capital indicates that the company is in a position to issue equity at a price that is high in relation with the cost of acquiring new equipment, thus making this an advantageous action, with a direct impact on the general growth of investments within the economy. On the other hand, a small q value shows that the acquisition of companies that have among their assets similar equipments and production factors is a more profitable course of action than buying new ones, so the level of investment is negatively affected (and with it the level of production) due to the increased activity on the mergers and acquisitions market rather than spending for new equipments.

Once the notion of the q variable is clarified, we can proceed to study the place that Tobin's concept has within the monetary policy transmission mechanism. Let us place ourselves in the case in which the money supply falls, which means that interest rates will rise. This will in turn provoke a drop in spending, including the spending level on capital markets, influencing negatively stock prices, as demand falls. In the same time, higher interest rates will alter the profitability ratio between stocks and bonds, putting extra pressure on stock prices. All these effects will lower the value of the q ratio defined by Tobin, which in turn will lead, as we have already seen, to a drop in investments. Similarly, a risen money supply and its consequences on the drop in interest rates will positively affect the evolution of financial assets by facilitating on one hand the capacity of the companies to finance their investment needs from capital markets and on the other hand by making the expansion through the acquisition of other companies more difficult due to their increased market value (Mishkin, 1995: 6). Cumulatively, these factors determine the companies to finance themselves cheaply from the market and used the attracted capital in order to buy new plant and equipment, thus having a positive effect on investment, consumption and, in a desired non-inflationist environment, an important effect on the production level due to the increased demand for those goods. This effect on production is however highly influenced by the elasticity that the supply side exhibits.

Tobin's q values may differ greatly from one country or monetary zone to another. Just to give an example, the mean of Tobin's q for US companies, computed for data gathered between 1994 and 2003, is 5.85 (Ehrmann and Fratzcher, 2004: 20), while in the Euro Zone countries, the value has varied between 1.16 and 1.22 in the 1995-2000 period (Bris, Koskinen and Nilsson, 2003: 8). In Romania, member of the European Union but not of the Euro Zone, Tudor (2011: 14) finds that the mean q value of a sample of companies listed on the Bucharest Stock Exchange is 1.06 (data gathered from 2006 to 2011). Even if periods for data gathering, nor the number and profile of companies, do not fully coincide, big differences are observable, especially between European countries and the US. This highlights the

diverse way of functioning within the asset price channel, leading to extra pressure on central banks to investigate, evaluate and consider the exact state that the asset price channel of their transmission mechanism is in. More, Ehrmann and Fratzcher (2004: 5-6) find that, at least within the US economy, the companies with a high Tobin's q value are affected significantly more by US monetary policy. This finding complicates the central bank's decision making process even further, as it shows that monetary policy actions have heterogeneous effects delivered through the asset price channel.

3. The Effect of Wealth on Consumption – General Aspects

The effect of wealth on consumption is the second theory that we will analyse which falls under the broader concept of the asset price transmission channel. Elaborated by Modigliani (1971) in his life-cycle theory, the effect of the wealth on consumption is monetarist in nature and is based on the concept that the level of consumer spending is determined by the level of the consumer resources. These resources are made up of human capital, real capital and financial wealth. The expansion or contraction of the monetary base, and implicitly the changes in interest rates, alter the values of the available consumer resources, making companies or individuals relatively richer or poorer. According to this, a monetary expansion and its effect of a fall in interest rates will trigger the rise of the real capital component (through the rise in the price of the real estate assets) and of the financial capital (through the rise in prices of stocks and bonds). The mechanism is based on the fact that lower interest rates encourage investments, more precisely the demand for real and financial assets. The resulted rise in wealth will determine their owners to use a part of this growth for either extra investment, either extra consumption, either both. The extra consumption resulted will in its turn generate extra investment because of the adjustment of the supply level, through increased production capacity to the risen demand. It is also worth mentioning that the extra consumption is dependent of the marginal propensity to consume of every particular group which experiences a change in wealth. According to Blanchard (2006: 49), the marginal propensity to consume describes the effect on consumption of an extra monetary unit of disposable income. The scenario in which interest rates rise is to be treated symmetrically and will have opposite effects, in the way of lowering wealth, which will lead to a lower level of consumption and investments.

4. The Effect of Wealth on Consumption – An Inter-Regional Analysis

At the end of the past century and the beginning of the current one, a series of studies were published on the issue of the marginal propensity to consume relative to the aggregate wealth using data from the United States. Out of this series, we focus on those written by Gale and Sabelhaus (1999), Kiley (2000), Davis and Palumbo (2001) which find marginal propensity to consume values between 4 and 7 cents for every dollar of extra wealth.

Other studies, like the one carried out by Mishkin (2007) and Bovin, Kiley and Mishkin (2010), show that there is conclusive evidence that validates the theory according to which wealth changes of same magnitude and in the same socio-economic environment, but in different asset classes, will have a different impact on consumption. We are more precisely talking about changes in real estate housing wealth, which have greater impact on consumption than similar changes in assets that fall under the other asset classes mentioned earlier.

More insight on the topic comes from Catte, Girouard, Price and Andre (2004). In their study of the economies that are members of the Organization for Economic Co-operation and Development (OECD), they found substantial differences in the ways that changes in wealth influence consumption and investments in different countries. According to the study, the propensity to consume generated by both the extra housing wealth and the extra financial wealth differ greatly according to the country we are focusing on and according to the time that has passed from the moment the change in wealth came into play. The values vary from 1 to 8 cents per monetary unit. Of interest are also the very diverse ways in which wealth influences consumption in the studied countries: there are countries in which temporal fluctuations of consumption are big (for example Australia regarding the residential wealth influences and Japan regarding the financial wealth generated changes in consumption), and others in which changes in certain types of wealth influences consumption very modestly, no matter the time frame considered (for example, the residential wealth in France and Germany). On the other hand, other cases show an immediate and high intensity response to such changes in wealth, which is tempered only by the passing of time (like the cases of the United States and Great Britain). However, the paper finds that most economies exhibit a gradual intensification of the propensity to consume with time, followed by a gradual fall once the peak is reached. Table 1 below summarizes the estimated short-term and long-term marginal propensities to consume generated by financial and housing wealth, visible on both short and long-term, in ten OECD countries.

Table 1: Short-term and long-term marginal propensities to consume in OECD countries

	Short -term		Long-term	
	Housing	Financial	Housing	Financial
Australia	0,02	..	0,07	0,03
Canada	0,03	0,03	0,06	0,04
France	..	..	..	0,02
Germany	..	0,01	..	0,02
Italy	..	0,01	0,01	0,01
Japan	0,01	..	0,01	0,07
Netherlands	0,02	..	0,08	0,06
Spain	0,01	..	0,02	0,02
United Kingdom	0,08	0,03	0,07	0,04
United States	..	0,02	0,05	0,03

Source: Catte et. all., 2004: 16

Yale University economists Case, Quigley and Shiller (2005) have studied the way in which wealth fluctuations in different asset classes influence consumption levels. Starting from two sets of data, one involving economic data gathered from 14 countries over 25 years (between 1975 and 1999) and the other made out of data

gathered between 1980 and 1990 from the individual states within the USA, the empiric study has reached a series of interesting conclusions, as described below.
The first conclusion is that there is at best a weak link between changes in financial stock market related wealth and changes in consumption levels.
The second conclusion reveals a strong correlation between changes in housing wealth and changes in consumption. An explanation for this fact is linked to the rapid development of consumption credit bank products backed with mortgages (same type of products that were at the base of the 2007 economic crisis!). These products make it very easy for home owners to transform the market value of their houses into cash which is immediately available for consumption. The characteristics of the credit market which facilitate the transmission process between housing wealth and consumption are dependent on several variables, like the type of interest (fixed or floating), the costs generated by the credit approval process, the refinancing costs and the flexibility of the mortgage market to changes in demand for housing and thus in housing market value. In the case of the United States and of other highly industrialized countries, which have a banking system which is more developed, highly concurential and more responsive to market financing needs, there is a higher correlation between fluctuations in housing wealth and consumption, which basically confirms the above detailed observations.
The Case et all study also concludes that, in the case of the international data set, a 10% rise in housing wealth leads, in the analyzed period, to an approximate 1,1% growth in consumption, while a similar rise in the wealth comprising out of stocks has a non-significant impact on the level of consumption. In the case of the American data set, results related to the stock market generated wealth vary substantially, depending to different study models. So, even if the effect of the change in consumption generated by housing wealth remains constant at 0,4% for a 10% change in wealth (with a dynamic of dropping to 0,3% after three semesters and to 0,2% after ten semesters from the initial shock), the values related to the housing wealth generated consumption vary, for the same data set, from 0% to 0,4%. But even if the results generated vary (so they cannot be regarded as error proof from a quantitative perspective) the essence of the findings and the underlying dynamic principles are consistent to other similar studies (even if performed on different data sets), therefore at least the principles and dynamics of the phenomenon, the thing that we most value for the purpose of our study, may be regarded as highly reliable.
Sousa (2009) takes a similar perspective on the effects of changes in wealth on consumption in the Euro Zone by using primary trimestrial data from the period between T1 1980 and T4 2007. His conclusions can be summarized as following:

- Changes in financial wealth produce important and statistically significant effects on consumption. Effects are strong especially in connection to wealth changes triggered by the stock market and mutual funds. In figures, a 10% growth of the financial wealth will trigger an immediate 0,6% growth in consumption. This value will eventually peak at 1,5%.
- Effects on consumption that are generated by changes in housing wealth are close to zero and not relevant from a statistic point of view.
- The rise of consumption is persistent and responds slowly to shocks, as the immediate change is of low intensity compared to the longer term one.
- The immediate effect of changes in wealth on consumption is substantially different from the same effect observed over a longer period of time. This fact is indicated by the major negative difference between the immediate

growth in consumption of 0,6% for a 10% growth in financial wealth and that of the longer term growth in consumption which peaks at 1,5% for a 10% growth in financial wealth.

The conclusions of this study are congruent with those of a similar study conducted by Skudelny (2009), which also finds no effect of housing wealth on consumption and important, time persistent and slow effects on consumption triggered by changes in financial wealth. However, the Skudelny study evaluates the marginal propensity to consume as being more modest, i.e. a 10% raise in wealth will generate a 0,13% growth in immediate consumption and a 0,35% growth on the long run.

We see rather significant differences between studies. However, these differences are based in a small extent on the interpretation methodology of the raw data, but more on differences in data sets from both a geographical/economic area and time point of view. The most important differences can be found when comparing results from the United States and the Euro Zone, differences which are linked less to the exact values of the marginal propensity to consume, but on the fundamentally different way in which these economic areas function, a fact that is underlined by the big differences in which the two main subcomponents of wealth (financial and housing) influence consumption (or fail to do so). We can include these differences into two categories:

The first category includes differences regarding the sub-component of wealth that influences consumption. More precisely, if in the Unites States the only sub-component with effects on consumption is the housing wealth while the financial wealth has no statistically significant effects, in the case of the Euro Zone things are exactly the opposite. Here, the financial wealth has the potential to influence consumption, while, for Europeans, the values from housing market do not represent a consumption altering factor. An explanation for this lies in the following:

- There are significant differences in the functioning of the banking system and consumer credit behavior between the two regions. In the USA, the mortgage based credit is highly developed and widespread, being a direct and easy way to transform housing market value into consumption capital. In contrast, in the Euro Zone this type of credit product is less spread, so changes in housing value don't have such a strong transmission channel and thus don't have an impact, at least not a significant one, on the consumption level.
- The public view on the two components of the financial wealth that may have an impact on consumption, i.e. stocks and mutual fund participation, is fundamentally different, as in the United States these instruments are being regarded from a more long-term investment perspective than in Europe, being the base of a greater number and variety of long-term saving vehicles, like pension funds or college funds.

The second category is made out of differences regarding the persistence of consumption and the time needed for it to react at shocks in wealth. In the USA, where consumption is influenced by housing wealth, we can observe a fast reaction to wealth changes, after which the advance in consumption is prone to drop in an almost linear fashion, provided that no new shock comes into play. According to Case et al. (2005), this drops with a quarter after four semesters and by half after ten semesters have gone by from the initial shock in housing wealth. In the Euro Zone however, things look just the opposite, as consumption has a higher initial resistance to changes in financial wealth (which, as seen, is the only one affecting

consumption in the Euro Zone), just to experience a sustained ascending trend later on, even in the absence of a new shock in wealth levels.
These studies and their findings, are different depending on the economies taken into consideration. They confirm the strong link between wealth effects and the consumption sub-channels (and consequently of the entire asset price channel) on one hand, and behavioral sciences on the other, as consumer mentality plays a decisive role in the way the relationship between wealth and macroeconomic context is carried out. These effects on consumption and, implicitly, on investments are not linear or uniform, but highly dependent of a series of social, economic and cultural factors, characteristic for each geographical area or population. The sensitivity exhibited by consumption spending relative to changes in wealth depends on a wide series of factors linked to the functioning of credit markets and the habits of consumers. Of great importance are the elements which reflect the tendencies to finance consumption, the size and composition of wealth and the perception of the persistence of change in the prices of relevant assets.

5. Conclusion

The theories surrounding the asset price channel come as additional to the classic views on the monetary policy transmission mechanism, which are based on money supply effects that navigate through the interest rate channel, the credit channel and the exchange rate channel. These theories are complementary to the more traditional ones dealing with the above mentioned channels, as they cover key areas in understanding the complex phenomena that take place within the economy as a consequence of monetary policy decisions. As we have seen, asset prices directly affect wealth, both of households and companies, with a great impact on investment and consumption. From a company point of view, theories based on Tobin's q value clearly show that asset prices are decisive in the decision between greenfield investments, with consequences on production levels, on one hand, and mergers and acquisitions, which imply that no new plant or equipment is bought from producers, on the other. From a household perspective, the wealth level, made out of the housing wealth level and the financial wealth level, influences consumption based on a mixture of economical, psychological and cultural criteria that is unique for every community, thus bringing differences in asset price channel functioning between economies and even heterogeneity in certain monetary zones. So, even if less reflected by the economic literature dealing with monetary policy transmission mechanisms than the so called traditional channels, the asset price channel is of great importance and, as proven in the previous years, its elements may also have significant consequences on the economy. These consequences can be both positive, by providing efficient means of transmitting monetary policy decisions, and negative, by allowing debt and consumption to reach unsustainable levels. This is the case of the profile discussed earlier, that has played a major part in the 2007 economic crisis, as the intense functioning of the housing channel linked the bubble from the housing market with the banking system, while at the same time the extra consumption that was generated by this link was fueling bubbles all across the economy. In this context, central banks need to profoundly understand the processes that take place within the asset price channel. This has to be done keeping in mind that, besides the general functioning principles of the channel, some points of potential inter-regional heterogeneity may appear. These points of difference may, as we have seen, manifest themselves with regard to the impact of

financial and housing wealth on consumption. The complex structure of the asset price transmission channel is yet another argument for central bank attention, as its efficient and effective use is crucial for the accomplishment of macroeconomic objectives.

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