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Dissertation Thesis

The impact of monetary policy on particular sectors of the economy – case study of Turkey and Poland

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Introduction

Emerging market economies have now become one of the most dynamic and economically important groups in the world economy. As these economies become larger and more integrated into international trade and finance, they face an increasingly complex set of policy challenges. Given their important role in the world economy in terms of population and sheer economic size, addressing these challenges effectively has important economic, social and political implications even beyond their national borders.

Monetary policy is typically the first line of defense against a number of internal and external shocks that these economies are now exposed to, so it is important to get it right. However, emerging market economies face a number of difficult challenges in designing monetary policy frameworks that work well in terms of promoting monetary and financial stability. Despite their rising economic might, many emerging market economies still have relatively underdeveloped financial markets and institutions, per capita incomes that still lag far behind those of advanced industrial economies, and a significant fraction of their population still living in poverty. This puts a number of constraints on the effective formulation and implementation of macroeconomic policies.

The influence of monetary policy over the economy promotes a dynamic environment, depending on the country's economic and financial structure, size and degree of openness. The results vary from country to country and can change over time. Eliminating the uncertainty related to the effects of the monetary transmission mechanism, which is described as a black box (Bernanke and Gentler, 1995; Mishkin, 1996 and 2001 and Nualtaranee 2001), requires new studies to be performed. After the 1960s, using the monetary transmission mechanism to explain the impact of monetary policies on the real economy became the subject of many theoretical and empirical studies. Since the limitations have decreased in financial markets and monetary policies have gained importance within economic policies (especially after the 1980s), there have been an increase in the studies about the operation of the monetary transmission mechanism. Even though there was a general opinion in the economics literature

that the monetary policies affect the real economy, there was no consensus achieved on how and through which channels this effect is realized.

Mishkin (1995) lists the channels in monetary policy that affect the output as them interest rate channel, exchange rate channel, other financial asset prices channel, and credit channel.

The first studies on the monetary transmission mechanism focused on the traditional interest rate channel that is based only on the operation of money and bond markets and were the first studies on this subject.

Each country has specie c institutional features and circumstances that determine how monetary policy decisions are formulated and implemented. Nevertheless, it is possible to identify a set of broad frameworks that have been used by emerging market and other economies. We begin by evaluating these options, in terms of their durability and effectiveness in achieving monetary policy objectives.

1. Managed exchange rate.
2. Flexible exchange rate and monetary targeting
3. Inflation targeting with managed float
4. Inflation targeting with exchange rate flexibility

Nevertheless, experience indicates that in countries that have adopted inflation targeting, inflation expectations are better anchored and inflation persistence is lower (Levin et al. 2004). Is the shift toward inflation targeting regimes well advised? We now provide a critical review of the theoretical and empirical evidence of the appropriateness of this regime for emerging market economies, and the potential complications faced by central banks that do adopt inflation targeting (see Mishkin, 2000, for an excellent alternative summary of these issues). Rose (2006) marshals evidence that this regime seems to deliver the best outcomes in terms of output growth, low inflation and also lower exchange rate volatility than alternative regimes.

Research Methods and Hypothesis

Basic macroeconomic models for monetary policy in conditions of contemporary society developed by mainstream economists including central banks of individual states are starting points for exploring the behavior of both nations and their deep analysis.

The aim of this study is to create a comprehensive characterization of monetary policy in Turkey and Poland, tools, which both nations are using and comparison of monetary policies between these two states, as well as to express the specifics of their behavior in terms of globalization of economies. To meet this goal I decided to practically verify the following hypothesis:

There is still a difference between economic development of Poland and economic development of Turkey, which is also influenced by different monetary policies in both nations.

Prior to setting out milestones and determine their corresponding hypotheses, it is necessary to express what the goals of monetary policy are and what a monetary policy is affecting. The official goals usually include relatively stable prices and low unemployment. Monetary theory provides insight into how to craft optimal monetary policy. It is referred to as either being expansionary or contractionary, where an expansionary policy increases the total supply of money in the economy more rapidly than usual, and contractionary policy expands the money supply more slowly than usual or even shrinks it. Expansionary policy is traditionally used to try to combat unemployment in a recession by lowering interest rates in the hope that easy credit will entice businesses into expanding. Contractionary policy is intended to slow inflation in hopes of avoiding the resulting distortions and deterioration of asset values.

I can now proceed with defining sub-goals of this dissertation to help me get the correct evaluation of the main hypotheses:

- At first, it is important to define what the money supply process in Turkey and Poland is and what are the determinants of money supply and their trend as well as result on it in Turkey and Poland.

- At second, I will deeply analyze the tools of monetary policy, which are used in Turkey central bank and in Poland central bank and their effect on economic situation of both nations.

- At third, I will describe describes policy-induced changes in the nominal money stock or the short-term nominal interest rate impact real variables such as aggregate output and employment and how these specific channels of monetary transmission, which operate through the effects that monetary policy affect interest rates, exchange rates, equity and real estate prices, bank lending, and firm balance sheets in Turkey and Poland.

- And Finally, I will do research on the transmission mechanism, how these channels work in the context of dynamic, stochastic, general equilibrium models and analyze the effectiveness of monetary transmission channels in Turkey and Poland.

The methodology of this thesis lies in its theoretical part in the collection, study and process knowledge of current scientific and technical literature related to monetary policies in both nations. The study is based on the analysis of secondary data obtained from the Turkey and Poland Central Banks Ministry of Finance, OECD Bureau of Statistics (BBS) and the paper on OECD. During the analysis, its different issues of Monetary Policy Statements (MPS), Monetary Policy Reviews (MPR), Annual Reports, Scheduled Bank Statistics, Working Papers, Policy Notes, Policy Papers were consulted. Also relevant statistical test, spreadsheet analysis has been made to find out the outcome. Tables as well as graphical presentation of the relevant data were used to show its trends and outcomes in this study. Basically this study was confined to the behavior and trend analysis among the components of money supply.

The data for estimation was provided by Central Bank of Turkey and National Bank of Poland, International Financial Statistic (IFS) and the other sources. IFS publishes macroeconomic data of almost all countries in the world includes Turkey and Poland. There is available a quarterly macroeconomic data of Indonesia from 1990 until 2010. I have chosen

these two nations because I can benefit from the experience in Turkey, Poland and the attempt to apply the positive aspects to Libya.

While processing the dissertation I have used the following methods of scientific research:

- o *The method of description*, which is based on the description of economic phenomena and processes. It was mainly used in the processing of theoretical chapters dealing with monetary policies in Turkey and Poland or to describe transmission mechanism for monetary policy in these two emerging market economies.
- o *The modeling method,* expressing the generalization of specific economic phenomena and processes in the form of economic and mathematical models. It was used especially in the theoretical part in the interpretation of different types of monetary policy, its instruments, targets and goals, as well as in the analytical part.
- o *The method of comparison* consists of comparing economic phenomena and processes. It was used especially in the analytical part of the dissertation dealing with the comparison of the effectiveness of monetary policy transmission channels between Turkey and Poland.
- o *The method of analysis and synthesis* is based on the segmentation of complex economic categories and processes, their exploration and the final summary of the findings. It was used especially in the analytical part of the thesis, which deals with the analysis of monetary transmission mechanism in both nations or in the final analysis in evaluation the economic development of Turkey and Poland or in proposals for better economic development in both nations.
- o *The historical method,* consisting in the preparation and examination of the sequence of development of certain economic categories and processes related to them. The method was mainly used to describe the development of monetary policy in Turkey and Poland.
- o *Statistical methods* that allow describing and evaluating trends in the development of economic indicators, describing the relationships between these indicators, modeling and statistical tools to estimate economic reality.

1. Monetary policies in Turkey and Poland

1.1 Theory of monetary policy

Monetary theory provides insight into how to craft optimal monetary policy. Monetary policy rests on the relationship between the rates of interest in an economy, that is the price at which money can be borrowed, and the total supply of money. Monetary policy uses a variety of tools to control one or both of these, to influence outcomes like economic growth, inflation, exchange rates with other currencies and unemployment. Where currency is under a monopoly of issuance, or where there is a regulated system of issuing currency through banks which are tied to a central bank, the monetary authority has the ability to alter the money supply and thus influence the interest rate.

Developing countries may have problems establishing an effective operating monetary policy. The primary difficulty is that few developing countries have deep markets in government debt. The matter is further complicated by the difficulties in forecasting money demand and fiscal pressure to levy the inflation tax by expanding the monetary base rapidly. In general, the central banks in many developing countries have poor records in managing monetary policy. This is often because the monetary authority in a developing country is not independent of government, so good monetary policy takes a backseat to the political desires of the government or are used to pursue other non-monetary goals. For this and other reasons, developing countries that want to establish credible monetary policy may institute a currency board or adopt dollarization. Such forms of monetary institutions thus essentially tie the hands of the government from interference and, it is hoped, that such policies will import the monetary policy of the anchor nation.

In theory, the main goal of the monetary policy for most central banks is to maintain the internal and external value of the domestic currency. The ultimate objective of most of the central banks is to keep inflation low and steady. Thus, most central banks attempt to control it indirectly through affecting interest rates or the quantity of monetary aggregates. In addition, in the open economy, the central bank cannot implement both an independent domestic

monetary policy – whether on interest rates or the money supply- and the exchange rate policy.

If it has independent target for interest rates, for example, it will have to accept the market-determined exchange rate. If, on the other hand, it targets the exchange rate it will have to accept the interest rates (and the quantity of domestic money) necessary to keep the exchange rate stable (Gray and Hoggart; 1996). On the other hand the central bank can temporarily set both domestic monetary policy and exchange rate. This could be achieved through sterilised intervention in which central bank offsets the monetary impact of its foreign exchange operations. In this point, as parallel to the aim of this study, the issue of different types of exchange rate systems should be analyzed separately.

When the exchange rate is fixed, to maintain the official parity, the central bank must intervene in the foreign exchange market by buying high-powered money with foreign reserves. In this manner, attempts to alter the domestic source component of the monetary base are impeded, even in the short run, by offsetting movements in its foreign source component. If the offset to domestic credit expansion is complete, the monetary base is determined independently of the central bank's policies by the saving and portfolio decisions of the public. The central bank can affect the monetary base only when domestic and foreign assets are imperfect substitutes. If there is perfect substitutability, the capital account offset to domestic credit measures is immediate and complete, provided there are no lags in portfolio adjustments (Obstfeld 1982). When the exchange rate is flexible, the level of exchange rate is determined by the supply and demand of currency. In this system, the nominal money supply becomes a policy determined variable and as in the fixed exchange rate, the central bank can attain independent monetary management only if there is imperfect substitutability between domestic and foreign assets. In this point, two concepts emerge: Offset coefficient and sterilization coefficient. Offset coefficient indicates the fraction of any domestic credit expansion reversed by central bank foreign reserve losses in the same period while sterilization coefficient 12 indicates that the degree of sterilization which is offset in the inflows so as to leave the overall money supply unaffected through open market operations or some other monetary regulations like reserve requirements.

Under those mentioned above, determining the offset and sterilization coefficients of the central bank could be useful in terms of measuring of the scope and the stance of the monetary policy. Indeed, this issue has discussed in the literature by several authors. They all estimated a reaction function for monetary policy and assessed the sterilization and offset coefficient. In Kamas (1986) for Mexico and Venezuela, in Renhack and Mondino (1988) for Colombia, in Fry, Lilien and Wadhwa (1991) and Fry(1996) for Pacific Basin Countries, Savvides (1998) for West and Central African Countries, the offset and the sterilization coefficients were estimated to measure the degree of monetary independence or performance of monetary policy. On the other hand, in Siklos (1996) and Arvai (1997) for Hungary, Altınkemer (1998) for Turkey and in Celasun-Denizer (1999) for Turkey, sterilization policy was examined. In those studies, monetary policy reaction functions were estimated where the reduced form equations were not derived from a general macroeconomic model. Whereas in Kamas (1986), a reduced form equation was derived from a general macroeconomic model. On the other hand, there are some issues related to these two approaches. Obstfeld (1982) indicates that the structural approach suffers from several disadvantages relative to the reduced-form approach. For example, it may be less robust with respect to certain specification errors in structural equations. Also, unlike the reduced form approach, it cannot be implemented when there is unlimited substitutability between domestic and foreign assets. However, the structural approach avoids an important econometric problem that may bias reduced-form estimates.

Announcements can be made credible in various ways. One is to establish an independent central bank with low inflation targets (but no output targets). Hence, private agents know that inflation will be low because it is set by an independent body. Central banks can be given incentives to meet targets (for example, larger budgets, a wage bonus for the head of the bank) to increase their reputation and signal a strong commitment to a policy goal. Reputation is an important element in monetary policy implementation. But the idea of reputation should not be confused with commitment.

A monetary policy reaction function describes how a central bank sets its policy instrument (for example short- term interest rates) in response to the economic developments.

The Taylor rule as a special reaction function is characterized by the response of the interest rate to inflation and the real output gap (Ullrich, 2003).

Taylor (1993) suggests a very specific and simple rule for monetary policy. His original formulation is shown following equation:

$$i_t = r* + \pi_t + 0.5(\pi_t - \pi*) + 0.5y_t$$

Where:

i_t = Central bank policy rate

$r*$ = Equilibrium real interest rate

π_t = Average inflation rate over the contemporaneous and prior three quarters

$\pi*$ = Inflation target of the central bank

y_t = Output gap (100 x (real GDP-potential GDP) / potential GDP).

The policy rule in equation has the feature that the central bank policy rate rises if inflation increases above the target or if real GDP rises above potential GDP and the central bank policy rate decreases if inflation below the target or if real GDP decreases below potential GDP (Kozicki, 1999).

The central bank influences interest rates by expanding or contracting the monetary base, which consists of currency in circulation and banks' reserves on deposit at the central bank. The primary way that the central bank can affect the monetary base is by open market operations or sales and purchases of second hand government debt, or by changing the reserve requirements. If the central bank wishes to lower interest rates, it purchases government debt, thereby increasing the amount of cash in circulation or crediting banks' reserve accounts. Alternatively, it can lower the interest rate on discounts or overdrafts (loans to banks secured by suitable collateral, specified by the central bank).

If the interest rate on such transactions is sufficiently low, commercial banks can borrow from the central bank to meet reserve requirements and use the additional liquidity to expand their balance sheets, increasing the credit available to the economy. Lowering reserve

requirements has a similar effect, freeing up funds for banks to increase loans or buy other profitable assets.

A central bank can only operate a truly independent monetary policy when the exchange rate is floating. If the exchange rate is pegged or managed in any way, the central bank will have to purchase or sell foreign exchange. These transactions in foreign exchange will have an effect on the monetary base analogous to open market purchases and sales of government debt; if the central bank buys foreign exchange, the monetary base expands, and vice versa. But even in the case of a pure floating exchange rate, central banks and monetary authorities can at best "lean against the wind" in a world where capital is mobile.

Accordingly, the management of the exchange rate will influence domestic monetary conditions. To maintain its monetary policy target, the central bank will have to sterilize or offset its foreign exchange operations. For example, if a central bank buys foreign exchange (to counteract appreciation of the exchange rate), base money will increase. Therefore, to sterilize that increase, the central bank must also sell government debt to contract the monetary base by an equal amount. It follows that turbulent activity in foreign exchange markets can cause a central bank to lose control of domestic monetary policy when it is also managing the exchange rate.

In the 1980s, many economists began to believe that making a nation's central bank independent of the rest of executive government is the best way to ensure an optimal monetary policy, and those central banks which did not have independence began to gain it. This is to avoid overt manipulation of the tools of monetary policies to effect political goals, such as re-electing the current government. Independence typically means that the members of the committee which conducts monetary policy have long, fixed terms. Obviously, this is a somewhat limited independence.

In the 1990s, central banks began adopting formal, public inflation targets with the goal of making the outcomes, if not the process, of monetary policy more transparent. In other words, a central bank may have an inflation target of 2% for a given year, and if inflation turns out to be 5%, then the central bank will typically have to submit an explanation.

The debate rages on about whether monetary policy can smooth business cycles or not. A central conjecture of Keynesian economics is that the central bank can stimulate aggregate demand in the short run, because a significant number of prices in the economy are fixed in the short run and firms will produce as many goods and services as are demanded (in the long run, however, money is neutral, as in the neoclassical model). There is also the Austrian school of economics, which includes Friedrich von Hayek and Ludwig von Mises's arguments, but most economists fall into either the Keynesian or neoclassical camps on this issue. Taylor did not econometrically estimate this equation. Taylor assumed that the weights central bank (Federal Reserve Bank) gave to deviations of inflation and output were both equal to 0.5; thus, for example, if inflation were 1 percentage point above its target, the central bank would set the real funds rate 50 basis points above its equilibrium value (Redebusch, 1998). Furthermore, in the original Taylor formula, target inflation rate (π^*) is assumed to be 2 percent per year and the equilibrium real interest rate is attributed to be 2 percent. Also remember that it= $(r_t + \pi_t)$ (Cartens, 2004).

Policy of various nations - Inflation targeting- Australia, Brazil, Canada, Chile, Eurozone, New Zealand,Norway, South Africa, Switzerland, Turkey, United Kingdom(alongside secondary targets on 'output and employment). Monetary targeting and targets a currency basket-China. Currency board (fixed to US dollar)- Hong Kong. Multiple indicator approach – India. Exchange rate targeting – Singapore. Mixed policy (and since the 1980s it is well described by the "Taylor rule," which maintains that the Fed funds rate responds to shocks in inflation and output)- United States.

Monetary policy can be implemented by changing the size of the monetary base. This directly changes the total amount of money circulating in the economy. A central bank can use open market operations to change the monetary base. The central bank would buy/sell bonds in exchange for hard currency. When the central bank disburses/collects this hard currency payment, it alters the amount of currency in the economy, thus altering the monetary base. The change of the monetary base can either through Quantitative easing or credit easing or qualitative easing.

1.1.1   Reserve requirements

The monetary authority exerts regulatory control over banks. Monetary policy can be implemented by changing the proportion of total assets that banks must hold in reserve with the central bank. Banks only maintain a small portion of their assets as cash available for immediate withdrawal; the rest is invested in illiquid assets like mortgages and loans. By changing the proportion of total assets to be held as liquid cash, the Federal Reserve changes the availability of loanable funds. This acts as a change in the money supply. Central banks typically do not change the reserve requirements often because it creates very volatile changes in the money supply due to the lending multiplier.

1.1.2   Interest rates

The contraction of the monetary supply can be achieved indirectly by increasing the nominal interest rates. Monetary authorities in different nations have differing levels of control of economy-wide interest rates. In the United States, the Federal Reserve can set the discount rate, as well as achieve the desired Federal funds rate by open market operations. This rate has significant effect on other market interest rates, but there is no perfect relationship. In the United States open market operations are a relatively small part of the total volume in the bond market. One cannot set independent targets for both the monetary base and the interest rate because they are both modified by a single tool — open market operations; one must choose which one to control.

In other nations, the monetary authority may be able to mandate specific interest rates on loans, savings accounts or other financial assets. By raising the interest rate(s) under its control, a monetary authority can contract the money supply, because higher interest rates encourage savings and discourage borrowing. Both of these effects reduce the size of the money supply.

1.1.3   Currency board

A currency board is a monetary arrangement that pegs the monetary base of one country to another, the anchor nation. As such, it essentially operates as a hard fixed exchange rate, whereby local currency in circulation is backed by foreign currency from the anchor nation at a fixed rate. Thus, to grow the local monetary base an equivalent amount of foreign currency must be held in reserves with the currency board. This limits the possibility for the local monetary authority to inflate or pursue other objectives. The principal rationales behind a currency board are three-fold:

- To import monetary credibility of the anchor nation;
- To maintain a fixed exchange rate with the anchor nation;
- To establish credibility with the exchange rate (the currency board arrangement is the hardest form of fixed exchange rates outside of dollarization).

In theory, it is possible that a country may peg the local currency to more than one foreign currency; although, in practice this has never happened (and it would be a more complicated to run than a simple single-currency currency board). A gold standard is a special case of a currency board where the value of the national currency is linked to the value of gold instead of a foreign currency.

The currency board in question will no longer issue fiat money but instead will only issue a set number of units of local currency for each unit of foreign currency it has in its vault. The surplus on the balance of payments of that country is reflected by higher deposits local banks hold at the central bank as well as (initially) higher deposits of the (net) exporting firms at their local banks. The growth of the domestic money supply can now be coupled to the additional deposits of the banks at the central bank that equals additional hard foreign exchange reserves in the hands of the central bank. The virtue of this system is that questions of currency stability no longer apply. The drawbacks are that the country no longer has the ability to set monetary policy according to other domestic considerations, and that the fixed exchange rate

will, to a large extent, also fix a country's terms of trade, irrespective of economic differences between it and its trading partners.

Hong Kong operates a currency board, as does Bulgaria. Estonia established a currency board pegged to the Deutschmark in 1992 after gaining independence, and this policy is seen as a mainstay of that country's subsequent economic success (see Economy of Estonia for a detailed description of the Estonian currency board).

Argentina abandoned its currency board in January 2002 after a severe recession. This emphasized the fact that currency boards are not irrevocable, and hence may be abandoned in the face of speculation by foreign exchange traders. Following the signing of the Dayton Peace Agreement in 1995, Bosnia and Herzegovina established a currency board pegged to the Deutschmark (since 2002 replaced by the Euro).

Currency boards have advantages for small, open economies that would find independent monetary policy difficult to sustain. They can also form a credible commitment to low inflation. Monetary policy rests on the relationship between the rates of interest in an economy, that is the price at which money can be borrowed, and the total supply of money. Monetary policy uses a variety of tools to control one or both of these, to influence outcomes like economic growth, inflation, exchange rates with other currencies and unemployment. Where currency is under a monopoly of issuance, or where there is a regulated system of issuing currency through banks which are tied to a central bank, the monetary authority has the ability to alter the money supply and thus influence the interest rate (to achieve policy goals). The beginning of monetary policy as such comes from the late 19th century, where it was used to maintain the gold standard.

A policy is referred to as contractionary if it reduces the size of the money supply or raises the interest rate. An expansionary policy increases the size of the money supply, or decreases the interest rate. Furthermore, monetary policies are described as follows: accommodative, if the interest rate set by the central monetary authority is intended to create economic growth; neutral, if it is intended neither to create growth nor combat inflation; or tight if intended to reduce inflation.

There are several monetary policy tools available to achieve these ends: increasing interest rates by fiat; reducing the monetary base; and increasing reserve requirements. All have the effect of contracting the money supply; and, if reversed, expand the money supply. Since the 1970s, monetary policy has generally been formed separately from fiscal policy. Even prior to the 1970s, the Bretton Woods system still ensured that most nations would form the two policies separately.

Within almost all modern nations, special institutions (such as the Bank of England, the European Central Bank, Reserve Bank of India, the Federal Reserve System in the United States, the Bank of Japan, the Bank of Canada or the Reserve Bank of Australia) exist which have the task of executing the monetary policy and often independently of the executive. In general, these institutions are called central banks and often have other responsibilities such as supervising the smooth operation of the financial system.

The primary tool of monetary policy is open market operations. This entails managing the quantity of money in circulation through the buying and selling of various financial instruments, such as treasury bills, company bonds, or foreign currencies. All of these purchases or sales result in more or less base currency entering or leaving market circulation.

Usually, the short term goal of open market operations is to achieve a specific short term interest rate target. In other instances, monetary policy might instead entail the targeting of a specific exchange rate relative to some foreign currency or else relative to gold. For example, in the case of the USA the Federal Reserve targets the federal funds rate, the rate at which member banks lend to one another overnight; however, the monetary policy of China is to target the exchange rate between the Chineserenminbi and a basket of foreign currencies.

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It is important for policymakers to make credible announcements and degrade interest rates as they are non-important and irrelevant in regarding to monetary policies. If private agents (consumers and firms) believe that policymakers are committed to lowering inflation, they will anticipate future prices to be lower than otherwise (how those expectations are formed is an entirely different matter; compare for instance rational expectations with adaptive expectations). If an employee expects prices to be high in the future, he or she will draw up a wage contract with a high wage to match these prices. Hence, the expectation of lower wages is reflected in wage-setting behavior between employees and employers (lower wages since prices are expected to be lower) and since wages are in fact lower there is no demand pull inflation because employees are receiving a smaller wage and there is no cost push inflation because employers are paying out less in wages.

To achieve this low level of inflation, policymakers must have credible announcements; that is, private agents must believe that these announcements will reflect actual future policy. If an announcement about low-level inflation targets is made but not believed by private agents, wage-setting will anticipate high-level inflation and so wages will be higher and inflation will rise. A high wage will increase a consumer's demand (demand pull inflation) and a firm's costs (cost push inflation), so inflation rises. Hence, if a policymaker's announcements regarding monetary policy are not credible, policy will not have the desired effect.

If policymakers believe that private agents anticipate low inflation, they have an incentive to adopt an expansionist monetary policy (where the marginal benefit of increasing economic output outweighs the marginal cost of inflation); however, assuming private agents have rational expectations, they know that policymakers have this incentive. Hence, private agents know that if they anticipate low inflation, an expansionist policy will be adopted that causes a rise in inflation. Consequently, (unless policymakers can make their announcement of low inflation credible), private agents expect high inflation. This anticipation is fulfilled through adaptive expectation (wage-setting behavior);so, there is higher inflation (without the benefit of increased output). Hence, unless credible announcements can be made, expansionary monetary policy will fail.

Announcements can be made credible in various ways. One is to establish an independent central bank with low inflation targets (but no output targets). Hence, private agents know that inflation will be low because it is set by an independent body. Central banks can be given incentives to meet targets (for example, larger budgets, a wage bonus for the head of the bank) to increase their reputation and signal a strong commitment to a policy goal. Reputation is an important element in monetary policy implementation. But the idea of reputation should not be confused with commitment. While a central bank might have a favorable reputation due to good performance in conducting monetary policy, the same central bank might not have chosen any particular form of commitment (such as targeting a certain range for inflation). Reputation plays a crucial role in determining how much would markets believe the announcement of a particular commitment to a policy goal but both concepts should not be assimilated. Also, note that under rational expectations, it is not necessary for the policymaker to have established its reputation through past policy actions; as an example, the reputation of the head of the central bank might be derived entirely from his or her ideology, professional background, public statements, etc. In fact it has been argued (add citation to Kenneth Rogoff, 1985. "The Optimal Commitment to an Intermediate Monetary Target" in 'Quarterly Journal of Economics' #100, pp. 1169-1189) that to prevent some pathologies related to the time-inconsistency of monetary policy implementation (in particular excessive inflation), the head of a central bank should have a larger distaste for inflation than

the rest of the economy on average. Hence the reputation of a particular central bank is not necessary tied to past performance, but rather to particular institutional arrangements that the markets can use to form inflation expectations. Despite the frequent discussion of credibility as it relates to monetary policy, the exact meaning of credibility is rarely defined. Such lack of clarity can serve to lead policy away from what is believed to be the most beneficial. For example, capability to serve the public interest is one definition of credibility often associated with central banks. The reliability with which a central bank keeps its promises is also a common definition. While everyone most likely agrees a central bank should not lie to the public, wide disagreement exists on how a central bank can best serve the public interest. Therefore, lack of definition can lead people to believe they are supporting one particular policy of credibility when they are really supporting another.

1.2 History of monetary policy

Monetary policy is primarily associated with interest rate and credit. For many centuries there were only two forms of monetary policy: (i) Decisions about coinage; (ii) Decisions to print paper money to create credit. Interest rates, while now thought of as part of monetary authority, were not generally coordinated with the other forms of monetary policy during this time. Monetary policy was seen as an executive decision, and was generally in the hands of the authority with seignior age, or the power to coin. With the advent of larger trading networks came the ability to set the price between gold and silver, and the price of the local currency to foreign currencies. This official price could be enforced by law, even if it varied from the market price.

With the creation of the Bank of England in 1694, which acquired the responsibility to print notes and back them with gold, the idea of monetary policy as independent of executive action began to be established. The goal of monetary policy was to maintain the value of the coinage, print notes which would trade at par to specie, and prevent coins from leaving circulation. The establishment of central banks by industrializing nations was associated then with the desire to maintain the nation's peg to the gold standard, and to trade in a

narrow band with other gold-backed currencies. To accomplish this end, central banks as part of the gold standard began setting the interest rates that they charged, both their own borrowers, and other banks who required liquidity. The maintenance of a gold standard required almost monthly adjustments of interest rates.

During the 1870-1920 period the industrialized nations set up central banking systems, with one of the last being the Federal Reserve in 1913. By this point the role of the central bank as the "lender of last resort" was understood. It was also increasingly understood that interest rates had an effect on the entire economy, in no small part because of the marginal revolution in economics, which focused on how many more, or how many fewer, people would make a decision based on a change in the economic trade-offs. It also became clear that there was a business cycle, and economic theory began understanding the relationship of interest rates to that cycle. (Nevertheless, steering a whole economy by influencing the interest rate has often been described as trying to steer an oil tanker with a canoe paddle.) Research by Cass Business School has also suggested that perhaps it is the central bank policies of expansionary and contractionary policies that are causing the economic cycle; evidence can be found by looking at the lack of cycles in economies before central banking policies existed.

1.3   Types of monetary policy

In practice, all types of monetary policy involve modifying the amount of base currency (M0) in circulation. This process of changing the liquidity of base currency through the open sales and purchases of (government-issued) debt and credit instruments is called open market operations. Constant market transactions by the monetary authority modify the supply of currency and this impacts other market variables such as short term interest rates and the exchange rate.

The distinction between the various types of monetary policy lies primarily with the set of instruments and target variables that are used by the monetary authority to achieve their goals.

Table 1. Types of monetary policy

Monetary Policy:	Target Market Variable:	Long Term Objective:
Inflation Targeting	Interest rate on overnight debt	A given rate of change in the CPI
Price Level Targeting	Interest rate on overnight debt	A specific CPI number
Monetary Aggregates	The growth in money supply	A given rate of change in the CPI
Fixed Exchange Rate	The spot price of the currency	The spot price of the currency
Gold Standard	The spot price of gold	Low inflation as measured by the gold price
Mixed Policy	Usually interest rates	Usually unemployment + CPI change

The different types of policy are also called monetary regimes, in parallel to exchange rate regimes. A fixed exchange rate is also an exchange rate regime; The Gold standard results in a relatively fixed regime towards the currency of other countries on the gold standard and a floating regime towards those that are not. Targeting inflation, the price level or other monetary aggregates implies floating exchange rate unless the management of the relevant foreign currencies is tracking the exact same variables (such as a harmonized consumer price index).

1.3.1 Inflation targeting

Under this policy approach the target is to keep inflation, under a particular definition such as Consumer Price Index, within a desired range. The inflation target is achieved through periodic adjustments to the Central Bank interest rate target. The interest rate used is generally the interbank rate at which banks lend to each other overnight for cash flow purposes. Depending on the country this particular interest rate might be called the cash rate or something similar.

The interest rate target is maintained for a specific duration using open market operations. Typically the duration that the interest rate target is kept constant will vary between months and years. This interest rate target is usually reviewed on a monthly or quarterly basis by a policy committee.

Changes to the interest rate target are made in response to various market indicators in an attempt to forecast economic trends and in so doing keep the market on track towards achieving the defined inflation target. For example, one simple method of inflation targeting called the Taylor rule adjusts the interest rate in response to changes in the inflation rate and the output gap. The rule was proposed by John B. Taylor of Stanford University.

The inflation targeting approach to monetary policy approach was pioneered in New Zealand. It is currently used in Australia, Canada, Chile, Colombia, the Euro zone, Norway, Iceland, Philippines, Poland, Sweden, South Africa, Turkey and the United Kingdom.

1.3.2   Price level targeting

Price level targeting is similar to inflation targeting except that CPI growth in one year is offset in subsequent years such that over time the price level on aggregate does not move.

Change in the price level – Change in relative prices Changes in the general price level are measured by means of price indexes which are based on a fixed basket of commodities. The most relevant index in developed countries is the national consumer price index. This index is based on a basket of N commodities and services whose prices are updated regularly (usually monthly). The price level is the weighted average of these prices. The weight attached to the individual commodities reflects the composition of the consumption of a «normal» domestic household.

The changes in relative prices must be distinguished from the changes in the general price level. The relative price of a product is its price compared with the price of another product. In a market economy, relative prices are determined by supply and demand. The exchange relations of numerous goods have changed markedly in the course of time. Thus

industrial products have become relatively cheaper compared with services. A striking example in recent years has been the development of computer prices.

The Central bank's monetary policy is oriented to the general price level and not to a relative price. It tries to avoid both inflation (a rising trend in the general price level) and deflation (a declining trend in the general price level). While changes in relative prices may contain information of value for an assessment of the economic situation, in themselves they are no reason for changing the course of monetary policy.

The monetary policy concept of the National Bank consists of three elements:

- The main goal of monetary policy is to preserve price stability. The National Bank considers price stability to be a rise in the national index of consumer prices of less than 2-3% per annum.

With a little leeway for moving upward, the National Bank takes account of the fact, among other things, that the consumer price index slightly overstates the actual inflation rate.

Measuring problems may, for example, arise when the quality of goods and services changes.

- The National Bank bases its monetary policy decisions on an inflation forecast for the three ensuing years. This medium-term period takes account of the time required for the transmission of monetary stimuli and emphasizes the need to react at an early stage to any threats of inflation. The forecast takes account of all indicators of relevance to price development. These also include notably the monetary aggregates.

- To steer the money market, the National Bank fixes a target range for the three-month rate for Swiss franc investments. As a reference rate it uses the three-month Libor (London Interbank Offered Rate). The target range for this reference rate is checked periodically and adjusted if necessary. It is fixed based on the inflation forecast and establishes the guidelines for monetary policy.

1.3.3 Monetary aggregates

In the 1980s, several countries used an approach based on a constant growth in the money supply. This approach was refined to include different classes of money and credit (M0, M1 etc). In the USA this approach to monetary policy was discontinued with the selection of Alan Greenspan as Fed Chairman. This approach is also sometimes called monetarism. While most monetary policy focuses on a price signal of one form or another, this approach is focused on monetary quantities.

1.3.4 Fixed exchange rate

This policy is based on maintaining a fixed exchange rate with a foreign currency. There are varying degrees of fixed exchange rates, which can be ranked in relation to how rigid the fixed exchange rate is with the anchor nation.

Under a system of fiat fixed rates, the local government or monetary authority declares a fixed exchange rate but does not actively buy or sell currency to maintain the rate. Instead, the rate is enforced by non-convertibility measures (e.g. capital controls, import/export licenses, etc.). In this case there is a black market exchange rate where the currency trades at its market/unofficial rate.

Under a system of fixed-convertibility, currency is bought and sold by the central bank or monetary authority on a daily basis to achieve the target exchange rate. This target rate may be a fixed level or a fixed band within which the exchange rate may fluctuate until the monetary authority intervenes to buy or sell as necessary to maintain the exchange rate within the band. (In this case, the fixed exchange rate with a fixed level can be seen as a special case of the fixed exchange rate with bands where the bands are set to zero.)

Under a system of fixed exchange rates maintained by a currency board every unit of local currency must be backed by a unit of foreign currency (correcting for the exchange rate). This ensures that the local monetary base does not inflate without being backed by hard

currency and eliminates any worries about a run on the local currency by those wishing to convert the local currency to the hard (anchor) currency.

Under dollarization, foreign currency (usually the US dollar, hence the term "dollarization") is used freely as the medium of exchange either exclusively or in parallel with local currency. This outcome can come about because the local population has lost all faith in the local currency, or it may also be a policy of the government (usually to rein in inflation and import credible monetary policy).

These policies often abdicate monetary policy to the foreign monetary authority or government as monetary policy in the pegging nation must align with monetary policy in the anchor nation to maintain the exchange rate. The degree to which local monetary policy becomes dependent on the anchor nation depends on factors such as capital mobility, openness, credit channels and other economic factors.

In the case of flexible exchange rates the central bank can steer the short-term interest rate and the banks' sight deposits and pursue an independent monetary policy. If, however, the central bank is obliged to keep the exchange rate at a certain level, this is no longer possible. In this case, it has to defend the fixed exchange rate parity by trading foreign exchange (buying or selling) with the banks against its own currency. It will thus lose control of the banks' sight deposits (and the short-term interest rate). Monetary policy is in principle delegated to the central bank of the country to whose currency the national currency is linked. The loss of independence has the effect that it is no longer possible to react to economic disruptions, and interest and inflation levels move closer to those of the other country. The prospect of such an adjustment of the interest and inflation levels induces countries which have had high inflation and a correspondingly high interest rate level to link the national currency to a stable foreign currency. In the case of Switzerland, however, these preconditions are not given so that in choosing between flexible and fixed exchange rates the advantages of an independent policy must be weighed against the disadvantages of exchange rate fluctuations.

1.3.5 Gold standard

The gold standard is a system in which the price of the national currency as measured in units of gold bars and is kept constant by the daily buying and selling of base currency to other countries and nationals. (i.e. open market operations, cf. above). The selling of gold is very important for economic growth and stability.

The gold standard might be regarded as a special case of the "Fixed Exchange Rate" policy. And the gold price might be regarded as a special type of "Commodity Price Index".

Today this type of monetary policy is not used anywhere in the world,[citation needed] although a form of gold standard was used widely across the world prior to 1971. For details see the Bretton Woods system. Its major advantages were simplicity and transparency

1.4 New Approaches to Monetary Policy

In the last twenty years there have been dramatic changes in consensual approaches to monetary policy. These changes, arising largely from continuing developments in macro- and monetary economics, have led to four policy recommendations:

- The goal of the central bank should be price and output stability, rather than long-term employment behavior.

- The central bank should be independent from elected government.

- Monetary policy should choose explicitly between an inflation target and an exchange rate target.

- As a corollary of 3, the exchange rate should either be fully flexible or credibly fixed.

These recommendations are in contrast to earlier thinking that central bank independence was not crucial, central banks were expected to pursue vaguely defined mixtures of price, employment and output goals, and countries were encouraged to manage their exchange rates.

The goals of monetary policy were reformulated as a result of the rational expectations revolution and a careful examination of the inflation-unemployment tradeoff. In the 1960s economists believed this tradeoff to be permanent, that a permanent reduction in unemployment could be achieved at the cost of a permanent increase in inflation. However, Edmund Phelps (1970), Robert Lucas (1973) and others argued that the tradeoff is only temporary, that while a permanent increase in the inflation rate does, initially, reduce unemployment, after some time it returns to a normal, or "natural" level. These theoretical developments undermined the belief that monetary policy could affect long-term levels of unemployment. The consensus now is that monetary policy in the long run should be aimed at keeping the inflation rate low, although in the short run it may be used to stabilize output and employment.

This change in thinking about the role of central banks was also prompted by the dynamic inconsistency literature, which began with a seminal paper by Finn Kydland and Edward Prescott (1977). They showed that a policymaker whose discretionary power prevents credible commitments has incentives to change its plans over time: it is "dynamically inconsistent". This framework was applied to monetary policy in two influential papers by Robert Barro and David Gordon (1983a, b) who showed that a central bank whose mandate is to minimize both inflation and unemployment will adopt policies that lead to excessive inflation and have little effect on unemployment.

Price stability Strictly speaking, price stabilization means a policy of targeting the price level; by contrast inflation stabilization means targeting the inflation rate. Hence price stability means an inflation rate of zero. However, throughout this paper, I will use the terms price and inflation stability more or less interchangeably. and central bank independence.

Several solutions to the central bank's dynamic inconsistency problem have been proposed. The first involves delegation of monetary policy to someone who particularly dislikes inflation. Appointing as the head of the central bank a person who cares more about inflation and less about output than the general population leads to lower average inflation, but

at the cost of an inferior response to macroeconomic disturbances. Another approach is to establish a reputation for the central bank as an inflation fighter.

Both approaches involve granting the central bank independence from elected representatives. For example New Zealand, in the early 1990s, gave its central bank independence and, moreover, made price stability the only goal of monetary policy. A second example was provided by the newly elected Labour government in Great Britain in 1997. Its first policy decision was to grant the Bank of England independence, abolishing the long-standing practice that the Governor reported to the Chancellor of the Exchequer.

These reforms curtail, or sometimes eliminate, the discretionary power of monetary policy. But while reducing the average rate of inflation, they restrict the central bank's ability to react to real shocks. However the evidence from developed market economies (e.g., Alberto Alesina, 1988) was that inflation rates were indeed lower in countries with more independent central banks, and that furthermore there were no significant differences in output behavior.

1.5 Explicit policy targets

The rational expectations revolution and consequent changes in the mandates of central banks changed the way policy is formulated and communicated. Central bankers traditionally followed a policy of ambiguity: the conduct of monetary policy was only vaguely defined, targets, if any, were implicit and the public was left to guess what actions the central bank might take. This gave the monetary authority insurance against loss of credibility: as the precise goals were not publicly known, the central bank ran no risk of not meeting them. However this approach also made it difficult for the bank to affect expectations and increased the costs of anti-inflationary policies.

Over the last decade, many central banks have switched to explicit targets. In developed countries, the most popular are inflation targets. The central bank commits itself to maintain inflation in a narrow band: for example in Canada, between 1 and 3 percent per year. This target is explicitly announced. There are two reasons for making the goal explicit. First, public knowledge of the goal may have a beneficial effect on inflationary expectations, and so

reduce the output and employment costs of disinflationary policy. Second, explicit announcement of the goal makes the central bank accountable. This is particularly important if the central bank has been given independence from the elected government.

The last decade has seen a rash of currency crises worldwide. They were experienced in several Western European countries in 1992-1993, Mexico in 1994, Southeast Asia in 1997-1998, the Czech Republic in 1997, Russia, Ukraine and Turkey in 1998, Brazil in 1999, Turkey in 2001 and Argentina in 2002. Recently, economists have begun to distinguish between credibly fixed exchange rate regimes (for example "currency board" systems anchored by large stocks of foreign exchange reserves), and so-called "pegged" rate regimes that are not credibly anchored. Some Western European currency-crisis countries chose to credibly fix within the European Monetary System (now the European Monetary Union), but Britain chose full flexibility. And in the late 1990s, flexible exchange rate regimes replaced the pegged policies in Southeast Asia, Russia and Brazil.

To some extent, pegged rate regimes have become more vulnerable as a result of huge increases in the volume of funds available to speculators in case of currency misalignment. Between 1977 and 1995 the ratio of foreign exchange trading to foreign trade increased from 3.5 to 58 (Felix, 1995). The volume of daily foreign exchange trading in 1995 was USD 1.2 trillion, or about USD 280 trillion a year, as compared with an annual volume of foreign trade in goods and services of about USD 4 trillion (Frankel, 1996). It is not surprising that maintaining pegged exchange rates has become much more difficult than in the past. It requires huge amount of foreign exchange reserves that even rich countries (for example Britain in 1992) do not have. A good example of a credibly fixed rate regime that survived speculative attack during the Asian crisis was Hong Kong's currency board system. The monetary authority of Hong Kong had at its disposal about USD 85 billion in own reserves, plus USD 125 billion as reserves held by the Bank of China. A second example was China's fixed rate regime, which was also backed by very large reserves, not to mention shielded from speculation by currency controls.

It is important, however, to understand that pegged exchange rates will be attacked by speculators only if fundamental circumstances – for example, high inflation, persistent current account deficits, unreliable capital inflows, or inadequate foreign exchange reserves – dictate devaluation. Moreover, governments are subject to pressure by interested parties – such as exporters and borrowers in foreign currency – and hence, typically, delay devaluation after "fundamentals" deteriorate. It is this delay by governments that provides speculators with the opportunity to bet on ultimate devaluation with the odds in their favor. And the very act of speculation increases the probably of success: that is, devaluation – and often a currency crisis – becomes "self-fulfilling." The Asian crisis, in particular, demonstrated the futility of pegged exchange rates when fundamental circumstances warrant devaluation.

1.6   Monetary Policy: Instruments, Targets and Goals

The central bank uses various policy instruments to have an impact on the real sector of the economy and, eventually, on inflation. The impact on inflation of changing these policy instruments takes place through various channels and the manner in which these channels operate is called the monetary policy "transmission mechanism." The main links between the central bank's policy instruments and inflation are presented in Chart 92. It is clear from the chart that changes in policy instruments generally affect long-term interest rates, the exchange rate, or both. Changes in interest rates or the exchange rate then have an impact on aggregate demand, which finally alters the demand pressures on inflation. In addition, the exchange rate can affect inflation directly, as changes in the exchange rate affect import prices. In most countries the short-term interest rate is used as the key monetary policy instrument. For example, higher interest rates, *ceteris paribus*, leads to lower consumption and increased saving, as the cost of borrowing to finance consumption and the return on saving both increase. In addition, higher interest rates raise the cost of investment activity financed by borrowing. The resulting lower consumption and investment leads to a lower level of overall economic activity, which in turn puts downward pressure on inflation.

Higher interest rates will also have an impact on the exchange rate when international financial capital is free to move. If the central bank unexpectedly raises its interest rate, the exchange rate of the domestic currency will appreciate because of an increase in the profitability of domestic assets compared to foreign assets. This causes an inflow of capital. The inflow of capital seeking a higher rate of return will increase the demand for the domestic currency and raise its price. The resultant higher value of the exchange rate will make foreign goods cheaper relative to goods manufactured by domestic producers, thus lowering exports, increasing imports, and finally dampening economic activity and thus, inflation. In addition, a higher exchange rate and lower import prices will have a direct impact on overall inflation depending on the importance of imports in the consumption basket.

There is no doubt that the central bank has the ability to use its policy instruments to help dampen economic cycles and promote price stability. However, at the same time, the very statements of the central bank are extremely important for forming expectations of the country's future economic performance and thus can influence inflation even if the policy instruments are not changed. For example, if a fixed exchange rate regime is in effect, a statement from the central bank announcing the possible depreciation of the national currency will result in growing inflationary expectations, which, in their turn, will result in escalating inflation, even if the central bank does not in fact allow the currency to depreciate. Therefore, the central bank must insure that it follows through on its statements in order to maintain public confidence in the monetary authorities.

A major task of central banks is to conduct monetary policy. This usually implies issuing currency, holding the country's foreign reserves, acting as banker to the government, serving as a lender of last resort, and, most importantly, controlling the money supply. Traditionally, this policy was aimed at achieving six basic goals: high employment, economic growth, price stability, and interest-rate stability, stability of financial markets and stability of foreign exchange markets. Some of these goals are consistent with each other, some are preconditions for the others, and some are mutually conflicting. For example, inflation that is either too high or too low (especially deflation) can hamper growth, increase unemployment,

and threaten the stability of financial and foreign exchange markets. Thus, maintaining inflation at an appropriate level should be a principal objective of central banks.

To guide themselves to their goals, central banks typically target three price and quantity variables: exchange rates, monetary aggregates, and inflation rates (in this latter case, the target is the same as the goal). All three targets are transparent for the public. They are relatively easily understood and send clear signals to the public and markets about current monetary policy and expectations concerning price stability. To achieve their targets, central banks typically use three instruments: open market operations, the central bank discount rate, and bank reserve requirements.

Exchange rate targeting often involves anchoring the domestic currency to a foreign currency that is expected to remain relatively stable. If this target is credible, inflation expectations should fall and the inflation rate should decline. The cost of such targeting may, however, be significant. In particular, the domestic central bank largely loses control over national monetary policies. Its money creation capacities become constrained by a foreign policymaker. Moreover, it risks speculative attacks on its exchange rate. While a developed market economy typically has relatively flexible factor and product markets, developing and transition economies may lack this flexibility - that is, may lack shock absorption capacities - and hence may suffer serious consequences from an inflexible exchange rate regime.

Monetary aggregate targeting enables monitoring of a central bank's performance (though not achievement of its ultimate goals) and thus promotes accountability of policymakers. It also helps to form inflation expectations. However for useful monetary targeting, strong relationships between monetary aggregates and inflation should exist. Financial innovations, brought about by improved information technologies and the development of new financial instruments and techniques, have blurred the distinction between monetary aggregates. This complicates monetary policy by making it less predictable and, thereby, less accountable. Moreover, if money velocity is unstable (as it is frequently the case in the transition countries), the relationship between monetary targeting and inflation remains weak, and thus monetary targeting is not very effective.

Inflation targeting has become popular over the past decade, and enjoys the important advantage that the public can directly monitor achievement of an ultimate goal. It makes central banks clearly accountable and helps reduce outside pressures on the conduct of monetary policy. Like monetary aggregate targeting, it preserves flexibility of the exchange rate and thus an automatic mechanism for adjusting to shocks to the domestic economy. Also, velocity shocks become less destabilizing since no fixed relation between money aggregates and price changes is assumed. The main problem is that the central bank does not directly control the movement of prices: there are substantial time lags between policy measures (instrument changes in response to inflation indicators) and their effects on inflation.

1.7 Monetary Policy in Transition Economies

The monetary policies just described may work quite well in countries with developed financial and banking systems, stable national currencies, strong foreign exchange markets and credible policies. However in transition countries, the conduct of monetary policy is more complex. Although they have gradually established monetary instruments and financial markets, transition countries still lack the adequate institutional environment to apply standard monetary policy effectively.

High inflation rates typically characterized the initial stage of transition. Since transition involves both structural and institutional changes, monetary policy is complicated by instruments and markets that malfunction at best and are often completely absent. Moreover, the inflationary process itself is different from that in developed countries. First came price liberalization and substantial adjustment at the beginning of transition. This led to a significant reallocation of resources. The initial decline in real output accompanied by unrelenting budget needs These needs were due to the necessity to perform functions of three governments: a central-planning government -- to own and manage activities of state enterprises; a market-economy government -- to perform policies consistent with a competitive market economy; and a transition government -- to establish new institutions and help adjust old ones to the market's needs. resulting in accumulating large deficits. These were financed either by

excessive external borrowing or internally, via inflationary monetary policy. Hence, the price stability was a primary goal from the outset, and indeed remains so now, even after the initial price stabilization has been achieved.

Central banks were unable to use some of the standard monetary policy tools due to lack of confidence in the creditworthiness of central banks' operations, a lack of competition among commercial banks, and shallow, underdeveloped government securities markets and commercial credit markets. Indeed even today in countries such as Turkey, many banks are still operated in the old fashion – they largely depend on the central bank's support, on preferential credits and on subsidized loans. Consequently, the demand for bank reserves is almost insensitive to changes in interest rates. Central banks typically lack effective instruments to control the monetary base.

For example, only in 2001 did the National Bank of Turkey feel prepared to institute regular open market operations using government securities.

Monetary policy in transition economies struggles with many other difficulties. One of them is de-monetization of the economy. When the banking system does not serve as an efficient financial intermediary, and currency markets are malfunctioning, economic agents seek means to effect transactions. Barter, inter-enterprise arrears, mutual settlements, various money surrogates and other non-monetary means of payment are associated with financing difficulties of transition and become widely used in such economies. Their use entails huge costs - for example transaction costs, lack of transparency and retreat to the shadow economy – and also undermines the central bank's control over monetary and inflationary processes. Unstable price, currency and banking environments also result in currency substitution or "dollarization": circulation of foreign currency in parallel with the national currency. Such substitution undermines the effectiveness and credibility of central bank policy. As a result, standard macroeconomic forecast models and policy evaluation techniques are readily less applicable.

An important precondition for effective monetary policy is independence of the central bank. However in transition economies, the central bank is often not separated from the

political process and is frequently subordinated to government's financing needs. The problem is aggravated by the fact that the very institution of a modern central bank is new for post-Soviet economies. In the Soviet period, only a single "monobank" operated. Other banks were highly dependent on this monobank, which formulated policies, allocated resources, controlled the implementation of these allocations, and enjoyed a monopoly over commercial banking operations. The newly established (or re-constituted) central banks had to practice "learning-by-doing" while formulating their tasks and arranging their activities.

2. Transmission mechanisms for monetary policy in emerging market economies

2.1 Monetary Transmission Mechanisms

Movements in the cash rate are quickly passed through to other capital market interest rates such as money market rates and bond yields. These interest rates are also influenced by the risk tolerance of investors and preferences for holding funds in a form that are readily redeemable. The cash rate and other capital market interest rates then feed through to the whole structure of deposit and lending rates. In many developed countries, most deposits and loans are at variable or short-term fixed rates, so there is a high pass through of changes in the cash rate to deposit and lending rates. But because of the other factors influencing capital market rates, and fluctuations in the level of competition in the banking sector, deposit and lending rates do not always move in lockstep with the cash rate.

Figure 1. How is interest rate affecting prices
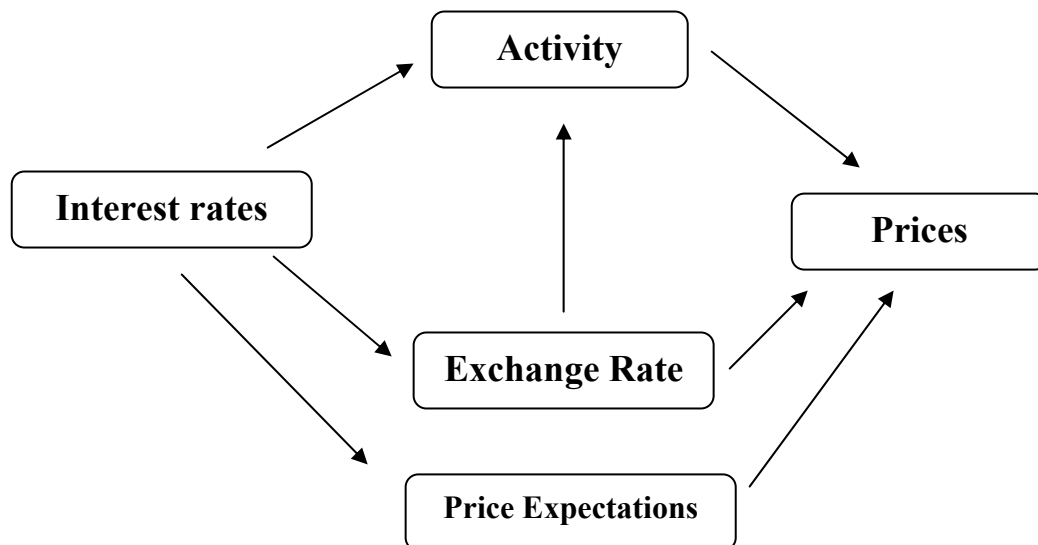
Source: own

The changes in interest rates affect economic activity and inflation with much longer lags, because it takes time for individuals and businesses to adjust their behavior. Interest rates affect economic activity via a number of mechanisms.

They can affect savings and investment behavior, the spending behavior of households, the supply of credit, asset prices and the exchange rate, all of which affect the level of aggregate demand. In turn, developments in aggregate demand, in conjunction with developments in aggregate supply, influence the level of inflation in the economy. Inflation is also influenced by the effect that changes in interest rates have on imported goods prices, via the exchange rate, and through their effect on inflation expectations more generally in the economy. The ways in which monetary policy affects the economy are far from mechanical in their operation.

The monetary transmission mechanism describes how policy-induced changes in the nominal money stock or the short-term nominal interest rate impact on real variables such as aggregate output and employment.

Examining the channels of monetary transmission mechanism (MTM) is of great importance to determine the potential effects of changes in monetary policy aggregates on general economic framework. Such a research empirically done would also give evidence to what purposes monetary authority aims at achieving and how it leads or has to be led by in conduct of monetary policy with respect to general economic policy purposes.

From different perspectives, monetary policy can work in order to affect the targets of policy makers. In our study, we follow Mishkin (1996: 1-27) to describe these channels briefly. The so-called interest rate channel is traditionally the most applied to when we call the effects of transmission mechanism, which is also usually coincided with the Keynesian economics of IS/LM framework such that expansionary monetary policy would stimulate the aggregate demand by increasing the demand for interest bearing assets thus lowering the interest structure of the economy, under a rediscount rate to present value using a constant rate of return on the future values of these assets.

The second potential transmission mechanism of monetary policy emphasizes the variety of returns on different assets considering relative asset prices between each other. For a developing country perspective such as Turkey, exchange rate could have been a consequential intermediary role to transmit the effects of monetary policy onto the real production side. In this way, monetary policy interventions leading to lower the real domestic interest structure of the economy could cause the relative prices of the assets held in hand in terms of exchange rate to be higher by the depreciation of domestic currency, in turn this case would probably affect the net export component of aggregate demand and domestic real income positively.

In an open economy framework, the larger the openness of domestic economy to world markets, the stronger the influence of exchange rate channel on real domestic activity through changes in net exports. Taylor (1995: 11-26) gives special emphasis to exchange rate channel of monetary transmission, which uses uncovered interest parity relationship under price rigidities employing an expectation model of term structures of interest rates settled in the economy.

Monetarist school of thought perspective, Meltzer (1995: 49-72) examines the MTM based on equalizing the relative prices of various assets held in hand reflecting to output changes in the long run. Another possible transmission mechanism works through the changes in equity prices within the economy. Mostly accompanied by Tobin (1969: 15-29) as the so-called Q-theory, the principal way in which financial policies affect the aggregate demand is by changing the valuations of physical assets relative to their replacement costs. With respect to monetary policy, a monetary intervention increasing monetary base would also lead to an increase in domestic real income either through using a direct transmission mechanism of Monetarists causing excess monetary balances of economic agents to be spent or using an indirect interest rate transmission mechanism of so-called Keynesians.

A higher demand in stock exchange leading to rise in equity prices related to changes in physical capital stocks can thus stimulate more investment and domestic income in the real side of the economy by the owners of these capital stocks. This case would also easily be

coincided with a wealth effect leading economic agents to rise their expenditures due to an increase in their wealth resulted from changes in the prices of securities transacted in the secondary stock exchange market (Keyder, 1998: 342).

As a last and recently developing channel of monetary policy, we can consider the credit and balance sheet channels especially emphasized by the economists of New

Keynesian school of thought concentrating on asymmetric information problems such as moral hazard and adverse selection in capital markets (Cooley, 1995: 131-137).

The view of credit channel mainly emphasizes the role of bank credits in transmitting the effects of monetary policy onto real economy, and in this perspective, investigates the effects of credit rationing applied to firms by banking sector in financial markets led by asymmetric information problems (Ökte, 1999: 277). As to the main arguments alleged by this transmission channel, as was plainly expressed in Cecchetti (1995: 83-97), Hubbard (1995: 63-77) and Bernanke and Gertler (1995: 27-48), credit market imperfections making the calculation of the marginal efficiency of investment schedule more complex lead to information asymmetries and moral hazard problems meaning increased likelihood of the occurrence of the thing against which is insured (Begg et al., 1994: 240) or which should be avoided, and in this environment, policy-induced increases in interest rates managed to cause a deterioration in the firms' net worth both by reducing the expected future sales and increasing the real value of nominally denominated debt. With lower net worth, the firms would be less creditworthy, due to now an increased incentive for themselves to misrepresent the riskiness of potential projects. In this case, potential lenders would increase the risk premium they required when making a loan. As a result, the asymmetric information problems in capital markets would make the internal finance of new investment projects cheaper than the external finance. But if this channel works in such a way expressed above, the more risky firms which do not have internal finance possibilities would unavoidably accept and try to use the harder borrowing possibilities and this case would in turn cause an adverse selection problem in these markets decreasing the efficiency of credit channel (Paya, 1997: 346).

Having examined the different transmission channels indicating how the monetary policy works in order to attain the ex-ante targets, in this paper our aim is to follow an approach examining the main characteristics and effectiveness of conduct of policy interventions of monetary authority giving special emphasis to the effects of capital flows and then the following course of real exchange rate and the monetary policy aggregate by way of employing a transmission mechanism ended with changes in the real interest rate and stock exchange as well as domestic inflation and real income growth.

Monetary transmission mechanism (MTM) is an illuminating policy tool in appreciating the monetary policy implementations by policy makers upon various nominal and real factors of interest in the eyes of economic agents.

Especially in an open economy highly exposed to the effects of capital flows on domestic business cycles with a liberalized capital account, control over policy aggregates may be difficult since many other economic policy implementations would be of great consequence on some other policy targets on macroeconomic income generation process and in providing price stability and external balance. In this respect, in our paper we aim to estimate the MTM for the Turkish and Poland economy. Our ex-post estimates for the period 1992-2010 using contemporaneous vector auto regression models such as impulse response analysis indicate that weakly exogenous capital inflows appreciate the real effective exchange rate, and in turn lower the real interest rates and domestic inflation while increasing both the real output growth and also the stock exchange index considering an asset-price channel for the latter and vice versa. We find some significant effects of the courses of capital flows and real effective exchange rate on monetary policy variable in the transmission mechanism, and such a case may impose an endogenous characteristic on the policy variable given also that both domestic real interest structure is highly sensible to the monetary policy and that monetary policy is subject to the structural breaks in the sense of so-called Lucas' critique of contemporaneous economics.

Uncertainty about the underlying monetary transmission mechanism may be more pronounced in emerging market economies than in developed ones. Small open emerging

market economies are typically characterized by, high exchange rate pass-through, asset and liability dollarization, currency and maturity mismatches in balance sheets of banks and firms, external financing constraints, and fiscal dominance. Macroeconomic relationships are generally blurred by the role of exchange rates in both growth and inflation dynamics. This implies that the credit and aggregate demand channels may not respond properly to a change in interest rates. Therefore, the small open economy context complicates the interest rate channel beyond that observed in conventional mechanisms. Instead, the macroeconomic environment may be shaped by exchange rates driven by the direction and magnitude of capital flows.

During this process, traditional monetary transmission channels have become more operative. Nevertheless, the evolution of the transmission channel cannot be solely attributed to the improvement in domestic fundamentals. The progress in financial integration, as well as in the European Union (EU) accession process, emerges as the major cause of changing dynamics of monetary transmission. For instance, global trends in risk appetite influenced by expectations regarding monetary policy actions to be taken by major economies have become more significant for domestic policy. No matter what these factors individually imply, they indicate a common point that exchange rate fluctuations resulting from reversals in capital flows have a large effect on monetary policy.

Monetary policy conduct in Poland and Turkey before 2000 incorporated the practice of fixed or managed exchange rate regimes where the exchange rate was the main policy instrument used to control inflation or to maintain financial stability. During past experiences with fixed or qualified exchange rate regimes, economic agents' expectations were heavily dependent on the movements of the nominal exchange rate, which were an easy-to-follow and compact information source regarding the future course of inflation. The influence of nominal exchange rates in the formation of expectations created an "indexation" mechanism in the price setting process. The most significant step towards normalization since the February 2001 crisis has been the transition to the inflation targeting regime, which requires the active use of short-term interest rates as the main policy tool while exchange rates are allowed to float.

In this way, the exchange rate has become more volatile and its information content for inflation has diminished to a large extent. The framework of monetary policy, in which interest rates are adjusted in response to deviations of inflation from a targeted path, allows the monetary authority to manage inflation expectations properly. For a small open economy, such a policy shift is expected to strengthen the interest rate channel in a standard transmission mechanism with a greater sensitivity of output and inflation dynamics to policy rates. The following chapter discusses the increasing effectiveness of the policy instrument in Poland Turkey during recent years.

The program succeeded not only in reducing the fragility of the economy thanks to the measures aimed at restructuring the banking and public sectors, but also in alleviating historically problematic issues such as inflation and country risk. This achievement has been instrumental in bringing both inflation and real interest rates down to more reasonable levels. Accordingly, economic agents started to reveal their inter temporal preferences in response to changes in interest rates, and the link between real interest rates and spending decisions has strengthened significantly.

By using time-varying parameter estimation methods, Kara et al (2007) find that the effectiveness of the interest rates on the output gap, and the impact of the output gap on inflation, have been increasing since the implementation of implicit inflation targeting (Figure 2).

Furthermore, the magnitude of both parameters displayed an increasing trend during the estimation period. To sum up, the transition to inflation targeting and the evidence of a more responsive aggregate demand to real interest rates have emerged as remarkable developments with respect to the improvement in the functioning of the interest rate channel of transmission. Nevertheless, weakened fiscal dominance, reduced dollarization, and improved interest rate pass-through have also been noteworthy determinants of the increased effectiveness of short-term interest rates as a policy tool.

Figure 2. Evolution of the interest rate channel1 Time-varying impact of interest rate on output gap in percentage points
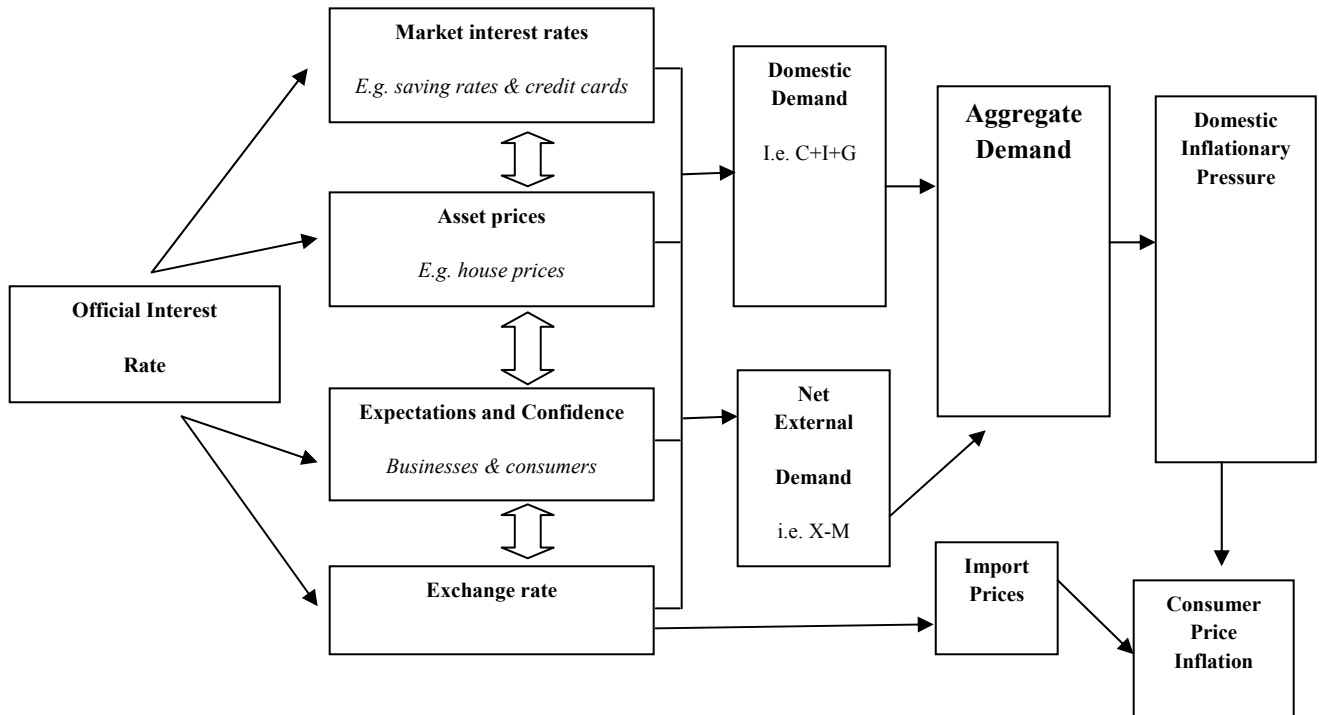
Source: own

2.2   Polish Monetary Policy

Poland is an example of a transition economy that began the 1990s with severe macroeconomic problems, and managed to tackle these problems relatively successfully over the next decade. By mid-1989, galloping inflation in Poland had escalated to hyperinflation, after liberalization of agricultural and other retail prices. Month-to-month inflation exceeded 40 percent. Pressures to print money were exacerbated by subsidies to food production and to state enterprises that increased the government budget deficit to 8 percent of GDP. Adding to the strain on the budget, not to mention foreign exchange reserves, was the putative need to service foreign debt that in convertible currencies had exceeded USD 41 billion. This pressure

was alleviated by a major Paris Club debt reduction of bilateral government-to-government debt in 1991, followed by a London Club reduction of commercial bank debt in 1994-95.

From the beginning of the transition period, the over-riding goal of the National Bank of Poland (NBP) has been to reduce the inflation rate, and then stabilize it at single-digit levels. To achieve this goal, the NBP targeted broad monetary growth from 1993–1995, and growth in the monetary base from 1996–1997. But at the outset, its primary target was the exchange rate. For this purpose, a stabilization fund of up to USD1 billion was set up at the end of January 1990 from contributions by 10 countries. The exchange rate was fixed at 9500 zloty (PLZ) to the US dollar (USD), and then devalued in May 1991 by 11 percent, to 11,103 PLZ/USD. At this point it was pegged to a basket of five convertible currencies, with a 45 percent share for the USD.

In October 1991 the peg was modified to a crawling peg, with the rate of crawl set by the NBP and the Ministry of Finance. On top of this crawl, the zloty was devalued stepwise in February 1992 to about 13,300 PLZ/USD. In May 1995, in the wake of rapid capital inflows and the consequent need to gain control over monetary growth, the crawling peg regime was replaced by a more flexible target zone arrangement.

From 1990 – 1994, the need to finance the budget deficit limited the NBP's independence from the Ministry of Finance. The government was forced to rely on monetary financing of the deficit because the Polish capital market was as yet underdeveloped. Hence the legal ceiling on central bank credit to the government (3 percent of GDP) was suspended by Act of Parliament. However by 1995, domestic capital markets, funded in part by foreign portfolio inflows, were sufficient to alleviate significant deficit pressures on monetary expansion, and the NBP largely regained its independence.

In the early 1990s, the NBP was forced to rely on credit ceilings to control money-creation, since there was no money market (real interest rates were negative), and excess reserves were highly unpredictable due to an efficient inter-bank payments system. However the NBP did manage to mop up considerable excess liquidity by introducing "National Bank" bills, which were, in turn, replaced in 1991 by Treasury bills. In addition, refinancing policy

was tightened, interest rates were increased to positive real values, and reserve requirements were hiked to the maximum legal limit of 30 percent. An interest rate term structure began to emerge, and credit ceilings were lifted at the end of 1992.

Since 1993, open market operations – repos, reverse repos, and outright bond and bill sales - have been the main instrument of monetary control. This is supplemented by bank reserve requirements, the use of which became feasible after the payments and inter-bank settlement systems were reformed in 1993.

By 1994, capital inflows were substantial and increases in foreign exchange reserves had become a sufficient problem for monetary control that sterilization operations were introduced. These were effective but very expensive, a measure of the cost being the difference between yields on domestic government bonds and the (much lower) yield on foreign exchange reserves.

In 1997, the NBP announced a policy of targeting the monetary base. In 1998, it switched to targeting interest rates. This latter policy could have compromised its ultimate goal of reducing inflation, since it risked losing control of the money supply. But although interest rates The target was the spread between the one-month Warsaw Interbank Offer Rate (WIBOR) and the Lombard rate were the operating target, broad money was the intermediate target. Achievement of monetary targets was facilitated by a wide exchange rate band of plus or minus 12 percent); thus monetary discipline remained an overriding objective. In fact the rationale for interest rate targeting was not to stimulate borrowing but the reverse: the economy's sharp recovery had led to a rapid expansion of credit demand that could only be monitored and controlled via interest rate hikes. This period is best characterized as discretionary rather than rule-based monetary policy.

In 1998, the newly formed Monetary Policy Council published a strategy paper covering monetary policy from 1999 – 2003 Medium Term Strategy of Monetary Policy (1999 – 2003), Monetary Policy Council, Warsaw, 1998. . This paper coincides not only with the office term of the first Council but also with Poland's preparations for accession to the European Union (EU) and, ultimately, European Monetary Union (EMU). The strategy paper

reaffirms the NBP's goal of reducing inflation, and adds the additional goal of fostering modern financial markets.

Joining EMU will require that the zloty be pegged to the euro within a plus or minus 15 per cent band for at least two years, and that the inflation rate must be reduced to the not more than 3 – 4 percent. The Monetary Policy Council undertook several decisions to implement these goals:- The monetary base as an operating target for monetary control was replaced by short term interest rates. Open market operations remain the primary instrument of control.

- Crawling devaluation of the zloty was abandoned.

- The zloty was then allowed to float with a wide band.

- Finally, in April 2001, the zloty was allowed to float freely.

- The free-float was combined with direct inflation rate targeting.

The strategy of direct inflation targeting implies abandoning intermediate targets such as the money supply. The NBP's announced goal is to reduce inflation below 4 percent by 2003. This disinflationary strategy may well put painful pressure on the non-tradable sector; but in the absence of modified "Maastricht" conditions for joining EMU, it is likely to be implemented. Lower and more stable inflation will, in turn, ease the job of stabilizing fluctuations of the zloty against the euro, whereas the free float will help to establish an equilibrium rate appropriate for the ultimate conversion to the euro. All this is to be complemented by fiscal discipline so as to minimize pressures for inflationary finance and maintain the NBP's independence.

Broadly, Poland's monetary strategy since 1990 has been successful in achieving its primary goal of disinflation. Moreover, disinflation has been achieved without paying a high long-term price in terms of lost output: although output contracted in 1990-1991, Poland's real growth since then has been remarkable. Poland's real GDP growth was the highest in Central Europe, reaching 7,5 percent in 1995–1997. In subsequent years Poland lost its leading

position. Currently real growth is down to 1,0 – 1,5 percent . Nevertheless the strategy encountered several challenges along the way, and in retrospect might have been improved upon.

A common criticism is that disinflation was too slow. Indeed, inflation according to the consumer price index, which was 249 percent in 1990, and reduced to 60 percent in 1991, was still 30 percent by 1995 (but by early 2002 stood at 3.5 percent). The records of the Baltic states were better: they quickly brought inflation down to single digit levels. The common feature of their policies is that monetary policy was anchored to strict exchange rate stabilization.

By contrast, Poland's exchange rate stabilization was compromised, until 1995, by a policy of crawling over-devaluation, the rationale for which was inter alia, to stimulate export demand as well as encourage capital inflows. Indeed the policy so successful in this respect that foreign exchange reserves put severe pressure on the money supply, necessitating sterilization measures in 1995 that came with high quasi-fiscal costs.

Monetary control was also compromised in the early years by pressures for inflationary finance stemming from large budget deficits. And finally, intermediate targets may have been inconsistent, shifting as they did between domestic credit, the monetary base, monetary aggregates and interest rates.

Nevertheless the broad strategy worked: an over-riding goal of disinflation, accomplished initially by exchange rate stabilization, followed by ever-wider exchange rate bands, and culminating with a free float and direct inflation targeting. Likewise, strategies for monetary control worked, in particular the early introduction of a Treasury bill market, which allowed open market operations to begin by 1991-1992. The challenge now is to reduce inflation to 4 percent or below by 2003 in order to satisfy pre-conditions for EMU and ultimate adoption of the euro.

2.3 Monetary Policies in Turkey

The stabilization policy based on a crawling exchange rate peg adopted in 2000 ended up with the deepest crisis of Turkish history in February 2001. Central Bank of Turkey (CBT) had no choice other than letting the Turkish Lira to float. Following the collapse of the crawling peg, Turkish Lira depreciated massively and the annual inflation rate soared to 68 percent at the end of 2001. The economy was in need of an alternative monetary policy regime. Given the success of other countries and also having exhausted all other possible options in the past, inflation targeting emerged as a natural candidate.

CBT was aware of the fact that inflation targeting is not than a mechanic device that can be switched overnight. Adopting inflation targeting with premature initial conditions could do more harm than good, since it could lead to a credibility loss for both the CBT and the inflation-targeting regime itself. The solution was to adopt an intermediate regime, namely, "implicit inflation targeting", until a reasonable set of conditions were satisfied.

The program set out in 2002 envisaged a rather fast pace of disinflation. The plan was to reduce inflation to 35% in 2002, 20% in 2003, 12% in 2004 and 8% in 2005, all formulated as December-December changes in the consumer price index. Since the aim was to bring inflation down from historically high levels, CBT interpreted these numbers as "upper bounds" rather than point targets. The outcome was surprisingly successful, outpacing all expectations. During the period of implicit inflation targeting, inflation came down from 68% at the end of 2001 to 7.7 percent at the end of 2005.

Under the standard monetary transmission mechanism and normal conditions, the monetary authority is supposed to raise interest rates when expectations are far above the target. However, the CBT never raised interest rates during the implicit inflation targeting period of 2002-2005. Instead, CBT pushed for fiscal reforms and directed all its communication efforts to convince the public that economic fundamentals were getting sounder under the new stabilization program. Encouraged by this success, the Central Bank of Turkey (CBT) decided to implement a full-fledged inflation targeting regime at the beginning of 2006. The main innovations in the full-fledged regime can be listed as follows: (i)

Decisions were to be made on a voting basis in which the Monetary Policy Committee assumed the whole responsibility on setting the interest rates; (ii) A multi-year target horizon was set and medium term inflation forecasts were published in the new "Inflation Report"; (iii) The CBT committed to be accountable in case of sizeable deviations from the target.

The new framework presented a three-year target horizon along with "uncertainty bands". Should the inflation fall outside the band, CBT would be expected to prepare a separate report explaining the reasons and the likely policy responses to the public. The CBT stressed that the uncertainty band is not a range of indifference, and that midpoint of the uncertainty band should be perceived as the "point target" (Kara, 2006). The regime faced its first stress test in the first half of 2006, when the economy was hit by a series of adverse shocks, drifting inflation away from the target. Although the CBT reacted decisively by significantly tightening monetary policy, inflation stayed at relatively high levels due to lagged effects of the accumulated shocks (Başkaya et al., 2008). In this context, it is important that the revision of the inflation target for the next three years announced by the Central Bank in June 2008 is seen as an exceptional measure in the wake of unforeseeable shocks (Oecd, 2008).

In mid-May 2001, just three months after the February crisis, Turkey started to implement a new economic program. One major integral part of the program was to overhaul the failing banking system. The restructuring program for the banking sector, inevitably, increased public debt-to-GDP ratio sharply. Therefore, other targets of the program, i.e. macroeconomic discipline and the ambitious agenda for structural reforms had to be achieved under severe fiscal dominance. At the beginning of 2002 the Central Bank of Turkey (CBT) announced that it started to implement 'implicit inflation targeting' and added that when the conditions were favorable it would switch to formal inflation targeting. The reason behind this choice can be explained as follows: The CBT faced the dilemma of not being able to relaunch one of the monetary policy strategies that more or less failed in the past, and, on the other hand, lacking the necessary environmental conditions to switch to inflation targeting regime. In the latter context the CBT was facing the following constraints: First and the most important issue was fiscal dominance: public debt was almost 105 percent of GDP causing to

debt sustainability concerns which reflect themselves as high spreads and real interest rates. Second, both the financial sector and non-financial corporations were severely affected from the crisis. The resulting balance sheet problems were putting serious constraints on the efficient implementation of formal inflation targeting. There were other challenges as well: high pass-through and backward looking pricing. The implicit inflation targeting regime was rather successful: The actual consumer inflation always remained under but close to the target and declined to 7.7 percent by the end of 2005. There was not output sacrifice during the same period: the average growth rate was 7.4 percent –almost twice of the historical growth rate. This outcome and the continuing remarkable fiscal discipline encouraged economic policymakers to switch to formal inflation targeting at the beginning of 2006. The public debt-to-GDP ratio was at 69 percent as of the end of 2005 - 35 percentage points lower than that attained at the end of 2001. Public sector borrowing requirement-to-GDP ratio declined to zero percent from a record high level of 16 percent of 2001. There were other factors reinforcing this decision: the record low level of default spreads (EMBI spreads) was registered in 2005, which fluctuated around a band of 215-310 basis points and remained around 220 basis points in the second half of the same year. The Turkish government declared that Turkey would sign a new stand-by agreement with the IMF covering the period 2005-2007. Fiscal and monetary discipline was again at the core of the program. Three important structural reforms were planned: social security reform (second phase), tax reform and financial services reform. So, it was clear that there would be the necessary powerful anchor for a successful implementation of full fledged inflation targeting. The second anchor would be the EU accession process.

While the role of the EU accession was going to be more visible in the medium to long term, it would nevertheless reinforce the positive impact of the new program.

The inflation target was set as a point target. The inflation rate measured by the headline consumer price index was used to define the target. The end-year targets for 2006, 2007 and 2008 were set as 5%, 4% and 4%, respectively. However, during the formal targeting period the external conditions were rather unfavorable: There were international financial stress build-up both in 2006 and 2007 causing temporary decline in risk appetite of foreign investors. Global warming increased food prices, whereas crude oil prices registered

record high levels. There were domestically originated negative factors as well: political tension increased during the 2007 presidential election which immediately followed by a general election on July 2007. Some moves of economic policymakers caused concerns about the viability of fiscal discipline that was at the core of the success so far and increased question marks regarding whether the essence of structural reforms was well-understood by the politicians. As a result, actual inflation rate remained well above the targets: 8.6 percent in 2006 and 8.5 percent in 2007 leading to credibility losses. The aim of this paper is to evaluate the two-year Turkish experience of formal inflation targeting and draw some lessons from it.

There are some conditions to be met before passing to an inflation targeting regime. Most important of these are the independence of the central bank, a statement in its law regarding price stability as its main aim, absence of fiscal dominance, a strong financial sector, low exchange rate pass-through, and absence of backward looking pricing. In this section we analyze the Turkish economy in the period preceding formal inflation targeting from these perspectives.

The CBT law was amended in 2001. Since that date it has had instrument independence according to article 4: "The primary objective of the Bank shall be to achieve and maintain price stability. The Bank shall determine at its own discretion the monetary policy that it shall implement and the monetary policy instruments that it is going to use in order to achieve and maintain price stability."There were other amendments as well. From the independence perspective the most important of them are the dismissal and appointment procedures of the governor and vice governors and the prohibition of credit extension to the treasury.

3. Analysis of the monetary transmission mechanism   in Turkey

3.1 Fiscal dominance: interaction of the interest rate and the exchange rate

The monetary policy conducted in Turkey has increasingly relied on open market operations (OMO) since the mid 1990s (Yilmaz, 2002: 18). The use of OMOs sharply increased beginning in 2001. OMOs currently are the primary instrument used to ensure equilibrium in the demand for and supply of bank reserves in Turkey. On a daily basis, the Central Bank of Turkey (CBT) forecasts the market liquidity needs by considering shortages or excesses of bank reserves and then engages in OMOs "in the form of outright purchase and sale of securities, repurchase and reverse repurchase agreements, lending and borrowing securities etc." as explained in Article 52 of the CBT Law (Yilmaz, 2002: 12).

The economic situation in Turkey before the 2001 period was characterized by chronic inflation. In the 1970s, as a result of large increases in imported oil costs, economic growth declined in real terms, and country's economy was beset with a financial crisis. Inflation averaged 20% in 1970s, 35-40% in the early 1980s, and 60-65% in the late 1980s (Ertugrul and Selcuk, 2001). In the 1980s, Turkey launched a rigorous economic reform of currency devaluation, labor productivity improvements, and a 4 The "corridor" system used in Canada, New Zealand, Australia, Denmark, Norway, and Sweden remove reserve requirements (O'Brien, 2007). In the 1990s, Turkish monetary policy targeted the real exchange rate to support the price competitiveness of Turkish exports (Kara et al., 2005). For this purpose, the CBT followed an implicit real exchange rate target without publicizing the exchange rate path, and kept "the depreciation rates in line with inflation" (Kara et al., 2005). The lack of publicizing the exchange rate path was a clear indication of a severe lack of transparency in the policy (Kara et al., 2005; Kesriyeli, 1997). That lack of transparency diminished the credibility of the CBT and paved the way for corruption which was partially revealed by the banking crises6.

CBT in the 1990s was the frequent change of monetary policies. The primary reason for changing the policies was their failure to reduce inflation and to maintain the exchange rate within its predetermined (but unpublicized) band (Kesriyeli, 1997). These failures were caused by macroeconomic instabilities, high public debt, fiscal policy dominance of monetary policy, pressure to monetize the government deficit, as well as corruption and lack of central bank credibility (Kesriyeli, 1997).

In 1999 when annual GDP growth was 4.7%and the inflation rate was 68.8 %, Turkey signed a three-year stand-by-agreement with IMF to gain control of inflation. Within this program the CBT pre-announced the exchange rate peg and "the nominal depreciation rate of Turkish Lira against an exchange rate basket for a one year period.

This way of setting the exchange rate as an explicit nominal anchor strengthened the already common perception that the changes in the exchanges are permanent." (Kara et al., 2005: 25). In 2000, the World Bank, within its Country Assistance Strategy program, assisted Turkey with several forms of lending, technical assistance and policy advice. The World Bank's assistance program, in parallel with the IMF's Stand-By arrangements, was aimed to reduce Turkey's economic vulnerability, and support implementation of the economic reforms (World Bank 2000). During the year 2000, real GDP grew by 7.3% and CPI inflation decreased to 39%. However, in late November 2000, the economy was suddenly disrupted by a banking crisis as foreign investors rapidly withdrew from the Turkish market, and cut lending (Turkey Economy, 2007), while the public sector borrowing requirements sharply increased, leading to an increase in the money supply and rapid devaluation of the currency. The CBT was unable to target the exchange rate with high inflation, so the CBT switched to a floating exchange rate regime.

The crisis, although it happened within short period of time, had long-standing underlying causes. One of the causes was that Turkey was an open economy with fully liberalized capital movements but with an underdeveloped financial system (i.e. thin financial markets) that was unable to manage the capital flows properly (Ertekin, 2003).

Turkey removed all the restrictions on capital movements and on borrowing by residence in international markets in 1990 when Turkey was still suffering high public sector deficits and high interest rates (Altinkemer, 2005). Turkey was not ready to adjust to full liberalization for two intertwined reasons. First, the domestic industries were not strong enough to compete with the foreign companies coming into the country after the liberalization (Ertekin, 2003). Hence, the liberalization paralyzed domestic industries, and policy instruments including the exchange rate and interest rates became ineffective (Ertekin, 2003). Second, the liberalization increased Turkey's vulnerability to large capital movements including speculative attacks and other capital flows which had various negative impacts on real economic activity. For example, real GDP growth proved to be highly susceptible to capital movements (Culha, 2006). This susceptibility was significant in Turkey because growth was heavily dependent on consumption that was financed by the capital inflows (Ertekin, 2003).

Culha (2006) empirically demonstrates that GDP growth accelerates in response to capital inflows, and it decreases with capital outflows. A large capital outflow in a short period of time can easily trigger a recession and a crisis (Ertekin, 2003). In fact, sudden and large capital outflows in late 2000 exacerbated the events leading to the crisis.

The capital outflows in early 2001 sharply depreciated the exchange rate which had already appreciated substantially due to the large capital inflows prior to the crisis (Ertekin, 2003). Other contributing causes of the crisis include bank failures and the reduction in confidence in the Turkish government's ability to achieve its short and long term targets; including decreasing inflation, acceleration of the privatization of state-owned enterprises and reducing the budget deficit (Ozturkler, 2002).

First, the Turkish banking system had an oligopolistic structure. The government financed a large portion of its deficits by borrowing from banking sector, as the capital markets were not developed adequately. This put enormous pressure on the banking system. Second, the government set growth rate targets that were unattainable. Failure to attain growth objectives combined with increased population growth rates resulted in massive external

borrowing and over employment in state owned enterprises. This led to large budget deficits along with a loss of confidence by foreign investors in the Turkish government's announced targets and policies (Ozturkler, 2002). Third, the crisis in Argentina in 2000 reduced the confidence of foreign investors in emerging markets in general. These foreign investors' assets in Turkey were approximately 60%of the share value of the Istanbul Stock Exchange in 2000 (Keyder, 2001). Although the crisis in Argentina did not cause an immediate sell off of Turkish Stocks, it decreased the confidence of foreign investors trading in Istanbul Stock Exchange and increased the vulnerability of financial sector contributing to the 2001 crisis (Keyder, 2001).

The crisis period that started in November 2000 reached its peak in February 2001 when the overnight inter-bank money market interest rate was an annualized 7500%, the domestic interest rates was 60%, the Istanbul Stock Exchange index dropped by 18% in a day, the currency lost 36% of its value in two days, and the central bank sold $5 billion of its $28 billion of reserves to prevent the Turkish Lira from losing even more of its value (Arguden, 2007; Turkey Economy, 2007). The Central Bank, on February 22nd, 2001, announced a switch from a fixed to a floating exchange rate regime. In 2001 real GDP dropped by 7.5 %, the inflation rate as measured by the CPI more than doubled (i.e. increased from 30% in 2000 to 68.5% in 2001); the net public debt which is the key economic variable indicating Turkey's vulnerability to shocks rose from 57.7% (in year 2000) to 100.8% of GNP; and net external debt increased from 39.9% (in year 2000) to 54.6% as a percent of GNP (Turkey Economy, 2007).

The dire consequences of the 2001 crisis led politicians to review the existing policies and initiate new stringent structural reforms. A program launched in the spring of 2001 involved structural reforms and new macroeconomic policies in order to accelerate the GDP growth rate and protect the country from the recurring crises by stabilizing and strengthening the growth process of the Turkish economy (Airado et al., 2004). The program so far has achieved successful results. "One can say that the speed of structural and institutional change in Turkey is impressive in the context of worldwide experience.

There is hardly another country where so much has been achieved in economic reforms in such a short period." (Airado et al., 2004). The reformation process primarily includes the transition to an inflation targeting regime, the transition to a floating exchange rate regime, the independence of the Central Bank, restructuring of state banks, enacting new laws and reforming the institutional and legal framework, in order both to improve the free market, and to reduce the public sector burden on the economy. The reformation process has mostly been accomplished under the harmonization of the Turkish economy with the EU standards. The reformation process affects the dynamics of the monetary transmission mechanism, not only because the new or renewed institutions and legislations serve to increase productivity and competition, but also because they increase the predictability, credibility, consistency and transparency of the political and economic governance in Turkey (Yilmaz, 2006).

Increased transparency reduces the scope for corruption and rent seeking; therefore, entrepreneurs are forced to increase their production rather than securing state contracts and access to monopoly positions (Airado et al., 2004). The increase in credibility and predictability stabilizes expectations about investments and attracts more foreign direct investment to the Turkish economy. Basci et al. (2007) note that the increase in capital inflows into Turkey has had a substantial effect on Turkish monetary policy, as well as on the monetary transmission channels. For example, the asset price channel has had a greater impact in post 2001 period than its impact in pre-2001 period. The CBT started to implement implicit inflation targeting at the beginning of 2002. After a 4 year transition period, Turkey adopted a full-fledged inflation targeting policy beginning in 2006. The inflation targeting regime is implemented through the use of short term interest rates, while allowing the exchange rate to float. The CBT uses short term interest rates in an effort to attain the targeted inflation rate, in order to achieve price stability (Ozatay, 2005). The CBT, in order to increase the transparency in its policies, explains the rationale behind its decisions concerning interest rates through public press releases.

The floating exchange rate regime that the CBT started in 2001 following the crisis has increased the volatility of the exchange rate while diminishing its information content for inflation. In the floating exchange rate regime, the primary principle is to let market

conditions, but not the central bank, determine the exchange rate. Although the CBT implemented this policy, it reserved its authority to intervene in the exchange rate market in cases of excess volatility. In such a framework, the Turkish monetary authority has had more ability to anchor inflationary expectations in line with the targeted inflation policy (Basci et al., 2007).

Switching to the floating exchange rate regime diminished exchange-rate-pass-through to prices, and weakened dominance of dollarization (i.e. widespread use of foreign currency as a substitute to the domestic currency). This change has also enhanced the effectiveness of monetary policy (Ozatay, 2005). In addition, given that Turkey is a small open economy, switching to the floating exchange rate regime is expected to change the monetary transmission mechanism by strengthening the interest rate and credit channels and weakening exchange rate pass-through to prices (Basci et al., 2007). This expectation is supported by theory that suggests that the floating exchange rate regime provides more discretion and flexibility for the state to focus monetary policy on domestic issues such as shocks to the domestic economy (Calvo and Mishkin, 2003). In contrast, a pegged exchange rate leaves little room for domestic monetary policy actions, as the interest rate is "determined by monetary policy in the anchor country to which the emerging market county has pegged" (Calvo et al., 2003).

One new law is "a new debt management and public finance law providing a comparative framework for risk management and limiting discretion of the executive branch of government in exceeding debt limits set in the annual budget law passed by Parliament". There are new banking laws requiring greater transparency and better risk management. Other new laws include laws regulating the telecommunication, electric and energy sectors and opening them up for competition, laws regulating the natural gas, sugar, and tobacco sectors, and a new law allowing increased foreign investment and putting it on an equal footing with domestic investment. In addition, two new independent agencies were established to regulate the banking system and public procurement (Airado et al., 2004).

After the adoption of the new economic program, Turkey experienced high and relatively stable annual growth rates, despite tight fiscal policies (Airado et al., 2004). In fact, the growth rates were 7.8%, 5.8%, 8.9%, 7.4% and 6.1% from 2002 through 2006 respectively. The inflation rates were 9.3%, 7.7%, 9.6% in 2004, 2005 and 2006. The inflation rates, particularly, deserve attention, as they are all single digit values, after Turkey suffered a period of chronically high inflation lasting for several decades7. In addition, net public debt fell to 59.9% of GNP in 2006 from 100.8% of GNP in 2001, and net external debt fell to 28% of GNP from 54.6% over the same interval. Airado et al. (2004: 1) note that "the assessment of both private market actors as well as of international institutions is that the program has been successful in re-establishing macroeconomic stability, reducing the debt ratio and laying the ground for a durable

In sum, the Turkish financial system was quite fragile, and the stability of the banking system and the successful continuation of the disinflation programs were contingent upon short term capital in-flows during the pre-2000 period (Ertugrul et al., 2001). Since adopting the new economic reforms in 2001, the Turkish economy has become more stable, experiencing higher real growth rates, relatively lower inflation rates, and a decreasing ratio of government debt to GDP. For this practical purpose, it is important to understand the link between monetary policy actions and real variables such as real GDP, through monetary transmission mechanisms. On the other hand, there is no empirical literature examining the monetary transmission in Turkey that pays special attention to the possible break in 2001 resulting from the reforms. The existing relevant research examines the monetary transmission by analyzing the data without considering the possible impact of the reforms in 2001.

There are some empirical studies examining the MTM before and after the crisis periods in the countries where economic situation had some similarities with the economic situation in Turkey. For example, Sidoui and Ramos-Francia (2008), Betancour, De Gregorio and Medina (2008), Gomez-Gonzalez and Grosz (2007) examine the MTM in Mexico, Chile and Argentina respectively where financial crisis in the recent decades were recovered through a series of reforms.

They find that transmission mechanism has changed after the crisis. Exchange rate channel weakens and exchange rate pass-through to prices decreases significantly after the crisis. They also find that credit channel is not working in each period.

3.2   Exchange rate channels

The exchange rate channel is one of the primary transmission channels in open economy macroeconomic models, although it may not be one of the primary channels in closed economy models. The link between monetary policy and exchange rates under the Uncovered Interest Parity (UIP) condition has gained increasing attention since the studies of Fleming (1962), Mundell (1963), and Dornbusch (1976). Under UIP conditions, the difference between interest rates of domestic and foreign assets equals the expected change in the exchange rate. The change in the exchange rate affects the domestic economy via both aggregate demand and supply. On the demand side, a monetary tightening that increases domestic real interest rates results in a real appreciation of the domestic currency through the uncovered interest rate parity condition. Consequently, domestically produced goods become more expensive than foreign produced goods. This decreases the net exports, leading to a fall in domestic output. (Obsfeld and Rogoff, 1995; Taylor, 1993). However, on supply side, a real appreciation of the domestic currency decreases the domestic price of imported goods, which decreases the domestic inflation directly, via the so-called exchange rate pass through effect (McCallum and Nelson, 2001). The level of pass through to the local currency price of imported goods and, hence, to the overall inflation rate depends on the import share, the magnitude of the appreciation and its timing, as well as the macro environmental characteristics of the economy (Alper, 2003; Campa and Goldberg, 2004; Kara et al., 2005). For example, Devereux, Engel and Storgaard (2003) point out the importance of macro level stability to have a low level of exchange rate pass through.

They argue that countries with low volatility of money growth experience low rates of exchange rate pass through whereas countries with highly volatile money growth have higher pass through.

Changes in exchange rates may exert significant balance sheet effects which change the net worth and debt-to-asset ratios. These changes lead to important adjustments in spending and borrowing especially for highly dollarized countries (Kamin, Turner and Van't dack, 1998). A large appreciation of the currency may lead to an improved balance sheet position which may improve domestic demand with a tendency to offset the negative price effect of appreciation.

The type of exchange rate regime influences the effectiveness of the exchange rate channel as a transmission mechanism. With a flexible exchange rate regime, the exchange rate channel works through aggregate demand and supply as mentioned above. But if the exchange rate is pegged to another currency, the ability of the monetary authority in a small country to affect real output via the exchange rate channel is limited. In this case, the domestic interest rate is determined by the interest rate of the other country to which the currency is pegged. However, if domestic and foreign assets become imperfect substitutes due to capital controls, domestic interest rates may deviate from international levels (De la Rocha, 1998; Kamin et al., 1998). Thus, even with a fixed exchange rate regime, monetary authorities may still have some room to maneuver. Yet, if domestic and foreign financial assets are close to perfect substitutes, which may be the case in highly dollarized countries, the scope of the monetary policy is severely limited (Kamin et al.,1998).

The rejection of the UIP condition by empirical studies using data at business cycle frequencies suggests that the exchange rate channel is likely to be weak (Meese and Rogoff, 1983). This implies that the net export channel of monetary transmission is not strong (Bean, Larsen and Nikolov, 2002). Moreover, there is strong evidence that there is imperfect exchange rate pass through. In fact, evidence suggests that exchange rate pass through has been declining within the recent decade (McCarthy, 1999; Burstein, Eichenbaum and Rebelo, 2002,

Campa et al., 2002). This decline suggests that exchange rate variations, at least to some extent, are absorbed in firms' margins rather than prices (Krugman, 1987; Campa et al., 2002). However, most of these studies focus on industrialized counties. Research on emerging

countries concludes that the exchange rate channel is still a very important transmission channel for small open economies. Taylor (1999) using simulations of Svensson's (1999) small open economy model, finds that the exchange rate channel effectively makes a connection from the interest rate to aggregate spending.

The USDTRY spot exchange rate depreciated 0.0108 or 0.59 percent during the last 30 days. Historically, from 1981 until 2012, the USDTRY averaged 0.9500 reaching an all time high of 1.9200 in December of 2011 and a record low of 0.0000 in February of 1981. The USDTRY spot exchange rate specifies how much one currency, the USD, is currently worth in terms of the other, the TRY. While the USDTRY spot exchange rate is quoted and exchanged in the same day, the USDTRY forward rate is quoted today but for delivery and payment on a specific future date. This page includes a chart with historical data for USDTRY - Turkish Lira Exchange rate.

Figure 3. USTRY-turkey lira exchange rate
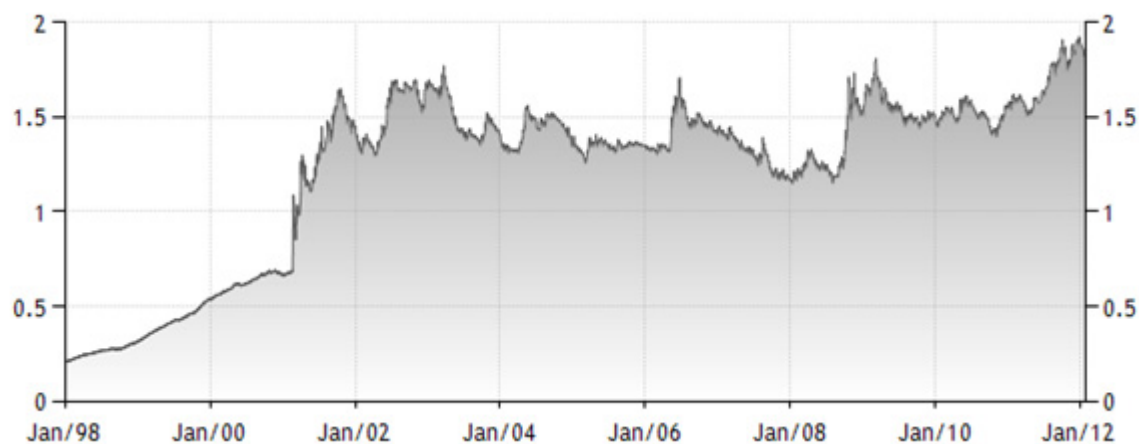
Source: OTC INTRBANK

Figure 2 Shows impulse responses of output (Industrial Production) after a one unit interest rate innovation using the baseline, endogenous and exogenous exchange rate models

for both periods. The impulse responses for the pre-crisis period (Figure 4A) suggest that the exchange rate channel worked exogenously. The impulse responses for the baseline and endogenous models are almost the same. The output response is larger (a greater fall in output) for the exogenous model.

Figure 4. **Impulse Response Functions of Output for Exchange Rate Models**
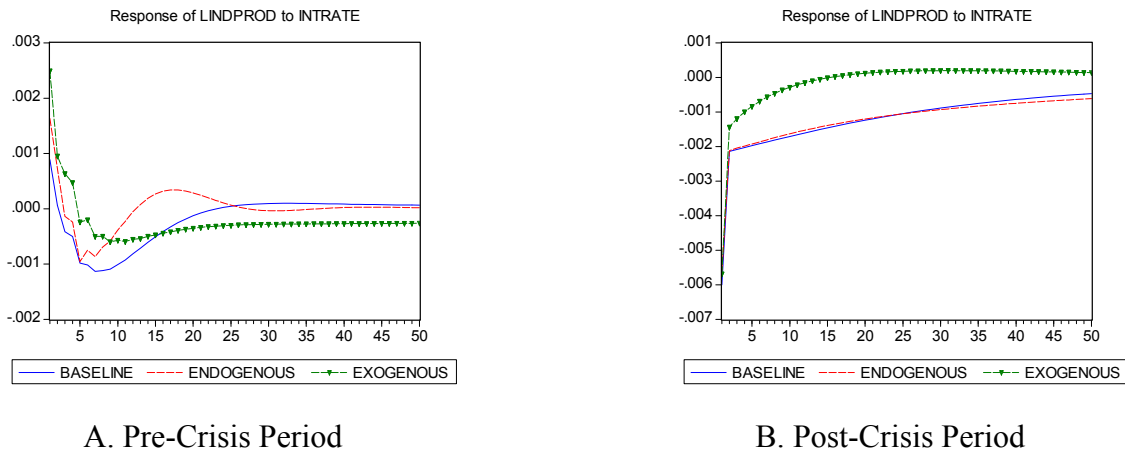
A. Pre-Crisis Period   B. Post-Crisis Period

Source: OTC INTRBANK

The impulse response for the post-crisis period (Figure 4B) shows a stronger endogenous channel and supply side effects dominating demand side effects. The demand side effect is the reduction of output from higher interest rates. The supply side effect is the exchange rate appreciation that reduces import prices; the exchange-rate pass through effect (McCallum and Nelson, 2001) that leads to an increase in output. This result indicates that output still depends substantially on imports in Turkey, especially imports of energy used in industrial production. Overall, the results indicate a strong exchange rate channel in the post-crisis period, consistent with the literature (Disyatat and Vongsinsirikul, 2003).

For the impulse responses for prices (not show), adding the exchange rate channel does not eliminate the price puzzle in the pre-crisis period, but does eliminate it in the post-crisis

period. The response of prices to an increase (depreciation) of the exchange rate is stronger in the pre-crisis period. The relationship between the nominal exchange rate and other nominal magnitudes is stronger for fixed exchange rates than for floating rates.

3.3 Interest rate channel

The interest rate channel is the primary MTM in conventional Keynesian models. For example, given some degree of price stickiness, a monetary tightening leads to an increase in nominal interest rates; the increase in nominal interest rates leads to an increase in real interest rates which raises the cost of capital (Kuttner and Mosser, 2002;Mishkin, 1995); the increase in the cost of capital decreases investment spending; the decrease in investment leads to a decline in aggregate demand and output. In contrast, an easy monetary policy leads to a decrease in nominal interest rates that causes a decrease in real interest rates; this decrease lowers the cost of capital which increases investment and eventually increases real output.

The basic mechanism of the interest rate channel remains unchanged in recently developed theories based on rational expectations and forward-looking expectations. (Clarida, Gali and Gertler, 1999; Rotemberg and Woodford, 1998). Yet, the recent research expands the theory by incorporating new variables into the model such as consumers' decisions on housing and durable expenditures, and substitution effects in consumption spending (Els, Locarno, Morgan and Viletelle, 2003; Taylor, 1995).

The original theory of the interest rate channel operates through businesses' decisions about investment spending. Taylor (1995) expands the theory by incorporating the effects of consumers' decisions on housing and consumer durable expenditures into investment decisions. In this way, an increase in the nominal interest rate which leads to an increase in the real interest rate after a monetary tightening decreases business fixed investment, residential housing investment, consumer durable expenditures and inventory investment, which decreases aggregate demand and output.

A policy-induced change in nominal interest rates generates a substitution effect by consumers (Els et al., 2003). Following a policy tightening, it becomes more rewarding for

consumers to postpone certain types of consumption and increase savings due to the increase in the real interest rate which is the relative cost of present versus future consumption. In this way, the change in interest rates influences the marginal cost of borrowing and borrowers' and lenders' cash-flow situation. Delayed consumption exerts a negative impulse on the current level of economic activity which decreases output (Clarida et al., 2000).

The interest rate channel is affected by central bank policies affecting the term structure of interest rates (i.e. the yield curve). The response of the various transmission channels to monetary policies affecting the yield curve depends on both the institutional framework and other factors, such as the structure and organization of financial markets, and the reactions of economic agents. The reactions of the agents depend on their expectations, their balance sheet positions, the composition of their financial assets and liabilities with fixed and variable interest rates (Horvath and Maino, 2006). Performance of the interest rate channel can be weak in most of the developing countries where the financial market is shallow and the state owns most of the banks. In such countries, limits on interest rates are binding, and state-owned banks have limited incentive to lend credits based on commercial criteria (Horvath et al., 2006).

The benchmark interest rate in Turkey was last reported at 5.75 percent. Historically, from 1990 until 2012, Turkey Interest Rate averaged 61.0 Percent reaching an all time high of 500.0 Percent in March of 1994 and a record low of 5.0 Percent in February of 2000. In Turkey the interest rates decisions are taken by the Central Bank of the Republic of Turkey Monetary Policy Committee (Türkiye Cumhuriyet Merkez Bankasi - TCMB).

Since May 18, 2010 the main interest rate is 1 Week Repo Lending Rate (Figure 5).

Figure 5. Turkey interest rate
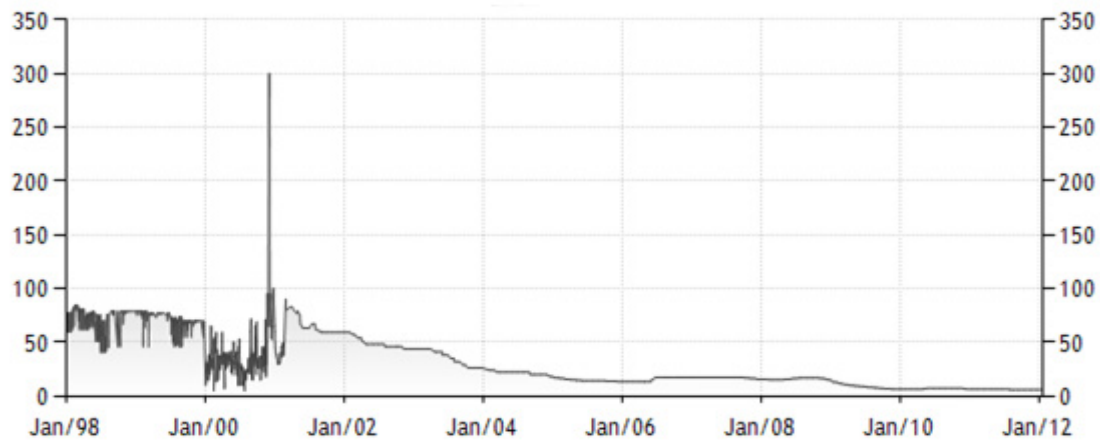
Source: Central Bank of Turkey

3.4 Asset price channel

The asset price channel reflects the impact of monetary policy on prices of domestic assets such as bonds, shares, and real estate, among others. It operates through changes in firms' stock market values and household wealth. Tobin's (1969) Q-theory of investment and Ando and Modigliani's (1963) life-cycle theory of consumption are two famous views of the asset price channel in the MTM.

Tobin's Q is defined as the ratio of the market value of a firm to the replacement cost of capital owned by that firm. The Tobin's Q-theory explains the mechanism of how monetary policy affects the economy through the policy's effect on the valuation of equities. "All else equal, a policy-induced increase in the short term nominal interest rate makes debt instruments more attractive than equities in the eyes of the investors". Hence, following a monetary tightening, equity prices fall (Ireland, 2005). This leads to a decrease in value of Q due to a decrease in the firm's value relative to the replacement cost of capital owned by the firm (Mishkin, 1995). In the case of a lower Q, investment becomes more costly for the firm; thus

investment projects marginally profitable before the monetary tightening go unfunded after the fall in Q (Ireland, 2005). This gives rise to a decline in output. The reverse applies when Q is high; investment spending increases leading to an increase in output. Ando et al. (1963), in their life-cycle theory of consumption, posit another view of the asset price channel. Ando et al. (1963) emphasize the role of wealth, in addition to income as primary determinants of consumer spending. The monetary transmission mechanism works through interest rates to asset prices and consumption in this theory. A policy-induced interest rate increase, after a monetary tightening, reduces the value of long-term assets, which in turn reduces households' financial wealth, leading to a fall in output. Both Tobin's Q-theory and Ando et al.'s life-cycle theory of consumption accept that the MTM works through interest rates to asset prices. However, as the monetarist's critiques of the traditional Keynesian model contend, the short term nominal interest rate is not the only mechanism affected directly by monetary policies. Monetary policy actions affect various markets such as the markets for durable goods, real estate, equities, and financial assets along with interest rates (Meltzer, 1995). Those markets directly affected by monetary policy actions influence asset prices thereby impacting output. For example, a monetary tightening leads to a decline in property values, which leads to a decline in household wealth decreasing consumption and output. Yet, Mishkin (1995) asserts that Tobin's Q encompasses the effect of the markets directly affected by monetary policy actions, in that for instance, a decline in land and property values lowers a firm's market value relative to its replacement cost, which leads to a decline in the value of Q. This leads to a decline in spending on structures and housing. Influence asset prices thereby impacting output. For example, a monetary tightening leads to a decline in property values, which leads to a decline in household wealth decreasing consumption and output. Yet, Mishkin (1995) asserts that Tobin's Q encompasses the effect of the markets directly affected by monetary policy actions, in that for instance, a decline in land and property values lowers a firm's market value relative to its replacement cost, which leads to a decline in the value of Q. This leads to a decline in spending on structures and housing. The effectiveness of the asset price channel varies with the macroeconomic performance influencing asset markets. For example, the level of functioning and the degree of organization of the securities' markets, expectations of future

macroeconomic performance influencing future earnings and short term interest rates, speculative bubbles, changes in risk premium, and so forth affect asset market prices.

Given such factors affecting asset prices, the efficiency of the asset price channel has an uncertainty component. This uncertainty is particularly large in emerging countries where asset markets are shallower and less competitive, and macroeconomic performance is more volatile. In sum, the performance of the asset price channel in emerging markets is more unpredictable compared to that in industrialized countries (Kamin et al., 1998). The impulse responses (Figure 6) for both periods display only minor differences between the baseline model and the models including an asset price channel. However, the variance decompositions of output for the endogenous asset price channel model reveal that asset price shocks make an important contribution to the variability of output in both periods. At a three-year horizon, asset price shocks account for around 23 % and interest rate shocks account for 13 % of the fluctuations in output, with own shocks accounting for 58 % in the pre-crisis period. In the post-crisis period, movements of asset prices account for 27 % of the variation of output, whereas interest rates account for 12 % and own shocks of output account for 48 %. Thus, these results indicate that the asset price channel is working in the both periods.

Adding asset prices to the model (results not shown) obtains the result of a price puzzle in both periods, whereas there was no price puzzle in the post-crisis period for the baseline model. However, the magnitude of the price increase is smaller when asset prices are included in the pre-crisis period models.

The inflation rate in Turkey was recorded at 8.9 percent in June of 2012. Historically, from 1965 until 2012, Turkey Inflation Rate averaged 38.5 Percent reaching an all time high of 138.7 Percent in May of 1980 and a record low of -4.0 Percent in June of 1968. Inflation rate refers to a general rise in prices measured against a standard level of purchasing power. The most well known measures of Inflation are the CPI which measures consumer prices, and the GDP deflator, which measures inflation in the whole of the domestic economy (Figure 7).

Figure 6. Turkish inflation rate
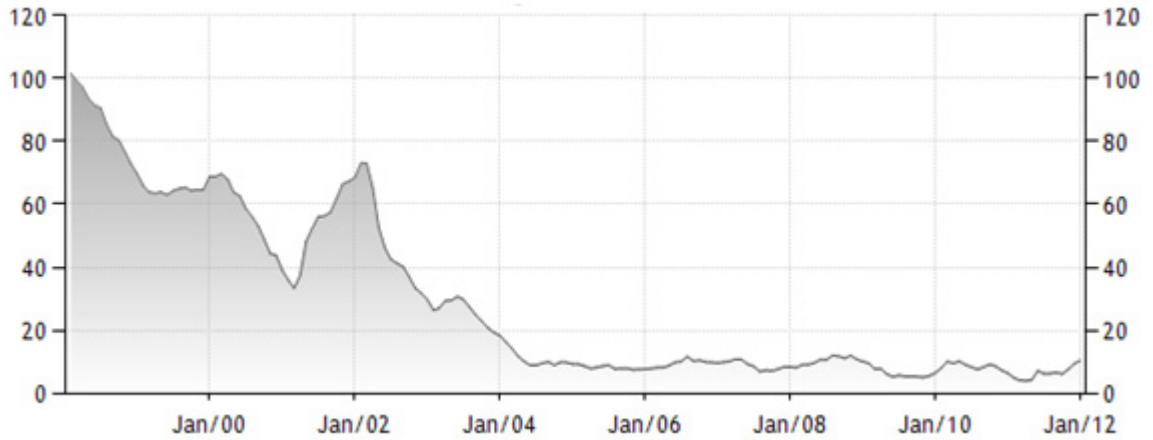
Source: Turkish Statisical Institue

Figure 7. Impulse response functions of output for asset price models
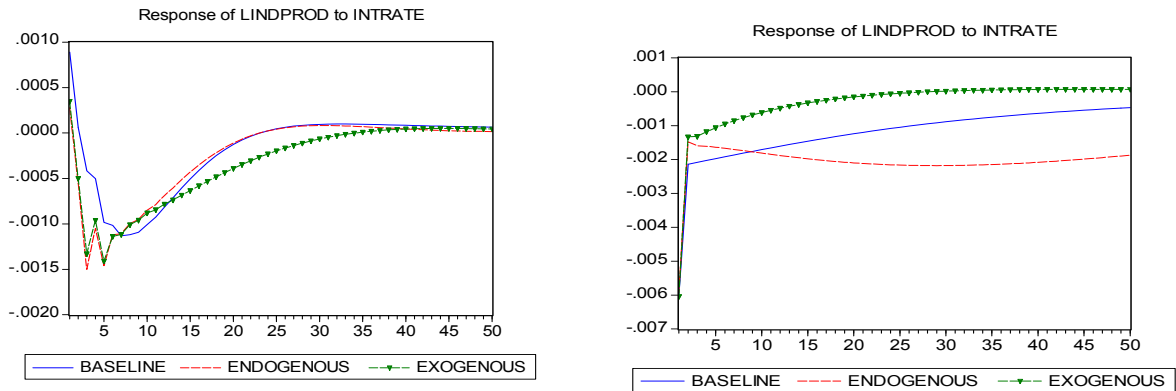
A. Pre-Crisis Period   B. Post-Crisis

Source: OTC INTRBANK

3.5 Credit channel

Credit Channel The interest rate channel implicitly assumes that financial markets are competitive, and that they work so efficiently that interaction between monetary policy and the real sector can be reduced to interactions between interest rates and real variables including output (Ozturkler, 2002). Yet, financial markets, especially those in emerging economies are so poorly developed that the quantity of the credit, as well as its price, becomes an important instrument of monetary policy (Kamin et al., 1998). In such conditions, new monetary transmission channels become prevalent channels. These channels, the so called bank lending channel, and the balance sheet channel, are both categorized as part of the credit channel.

The credit channel, to Bernanke et al. (1995), is not an independent alternative to the traditional monetary transmission channels. Instead, to Bernanke et al. (1995), the credit channel is an "enhancement mechanism" encompassing a set of factors amplifying and transmitting interest rate effects. In fact, "the direct effects of monetary policy on interest rates are amplified by endogenous changes in the external finance premium", which is equal to the difference between funds raised externally (by issuing debt or equity) and internally (by retaining earnings) (Bernanke et al. 1995). The size of the external finance premium reflects imperfections in the financial markets, and it is affected by agency problems in the financial markets due to asymmetric information (between borrower and lender) and the costly enforcement of contracts (Mishkin, 1995).

Bernanke et al. (1995) reports two possible channels through which a central bank influences the external finance premium in credit markets: the bank lending channel, and the balance sheet channel.

As seen in Figure 6 for the pre-crisis period, in the short run, output responds very quickly in the endogenous and exogenous models relative to baseline model, but the medium and long-run responses of output are similar in both the endogenous and baseline models. This channel does not appear to be very effective in the medium and long run. The credit channel is weak in the pre-crisis period.

In the post-crisis period, the initial effect of the policy shock on output is the same for both the baseline and endogenous credit channel models. Output decreases sharply in the first month and then begins to stabilize. Although the initial short run effect of the shock on output is the same in both models, the medium and long run effects are different. For the endogenous model, output stabilizes slowly relative to the baseline model. The response of output to interest rate shocks is somewhat larger than the baseline model in long run, suggesting that part of the interest rate shock in the endogenous model reflects bank lending shocks.

The impulse responses of output for both the endogenous and exogenous models indicate the existence of a stronger credit channel in the post-crisis period. The behavior of output in the endogenous model is different than that of the exogenous model in the long run. These results suggest that the credit channel is stronger in the post-crisis period relative to the pre-crisis period, as expected. The reforms following the crisis strengthened credit markets (Basci et al., 2007).

Adding bank loans to the model endogenously or exogenously does not solve the price puzzle in the pre-crisis period (results not shown), but it decreases the inflationary effect on prices quite a bit. In the post crisis period, adding bank loans to the model endogenously further decrease prices. In the exogenous model, prices increase more relative to baseline model after an interest rate innovation as shown (Figure 8).

Figure 8. Impulse response functions of output for credit channel models[1]

A. Pre-Crisis Period   B   B. Post-Crisis Period
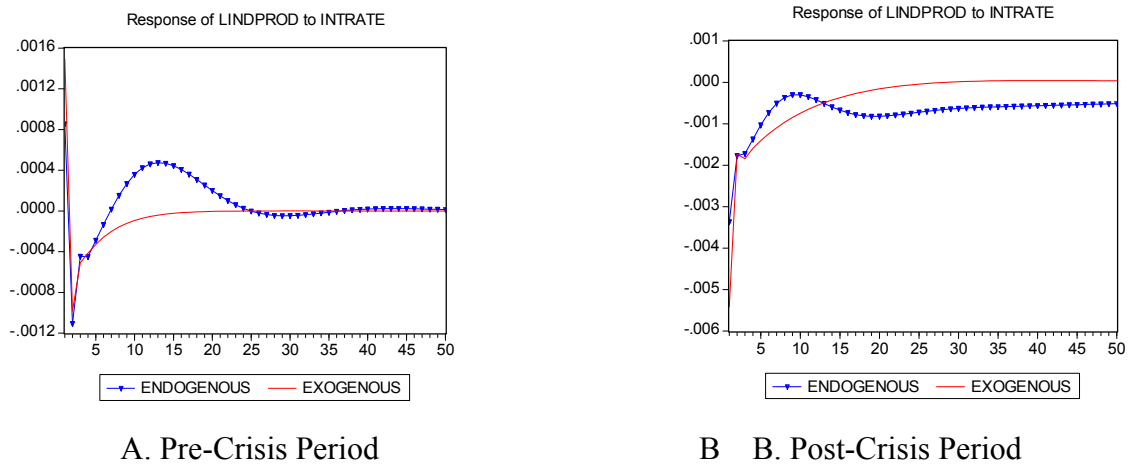
Source: OTC INTRBANK

The creation of money and credit by the banking system is a process which is influenced by a number of factors. The basic mechanism can, however, be demonstrated by a simple example. Let us start from the presupposition of a world without commercial banks in which the banknotes issued by the central bank are the only payment instrument. The money supply is equal to the sum of the banknotes in circulation and amounts to Tlk 1,000. Now Bank A is established; the public then deposits all its banknotes in this bank in return for interest. The money supply still amounts to Tl 1,000; however, it now no longer consists of banknotes, but of sight deposits at Bank A. Bank A is aware that the public can withdraw its sight deposits at any time. But it also knows that it is unlikely that all depositors will do so simultaneously. It therefore retains only part of the banknotes as a reserve and uses the rest to extend a loan for which it can charge interest. Let us assume that it will hold 20 %, i.e. TL200, as a reserve and use the rest, i.e. TL 800, for lending purposes. Bank A has thus increased the money supply, i.e. the payment instruments in the hands of the public, by TL 800 to TL 1,800.

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[1] Likelihood ratio tests indicate an exogenous exchange rate channel in the pre-crisis period and an endogenous channel in the post-crisis period. Basci et al. (2007) also find that the supply side effect is dominant. Likelihood ratio tests indicate the asset price channel works exogenously in both periods. Likelihood ratio tests support the existence of an exogenous credit channel in the pre-crisis period and an endogenous channel following the crisis

The TL 1,800 are made up of TL 1,000 in the form of sight deposits and TL 800 in the form of banknotes.

This is not the end of the money creation process. The borrower uses the TL 800 to pay for goods and services, and the seller deposits the banknotes received in payment at the newly established Bank B. Bank B credits the TL 800 to the seller as a sight deposit, keeps back 20 % as a reserve and lends the remaining TL 640 to a further borrower. It thus creates TL 640 worth of new money. The borrower of Bank B uses it to acquire goods and services. The banknotes are paid into Bank C, which again retains 20% as a reserve and lends the remainder of TL 512. The three banks have thus already created new money for TL 1,952, almost tripling the original money supply.

In this way, the money creation process can continue for some time. The newly extended loans and the corresponding deposits, however, become smaller and smaller as the banks always retain 20% as a reserve. The end of the process is reached as soon as the original amount of TL 1,000 has been used up for reserves. If the reserve rate is 20 %, this will be the case when all the banks combined will have extended loans to the total amount of TL 4,000 and the entire money supply thus amounts to TL 5,000.

The money and credit creation potential of the banking system can be expressed in this simplified example by the multiplication formula (1/RR)*1,000 Turkish Lira, with RR representing the reserve rate (here 0.2). The formula shows that the lower the reserve rate, the bigger the volume of credits and/or deposits created by the banks (Figure 9).

The model, however, leaves out of account various factors which can also influence the interplay between a central bank, the commercial banks and the public. Nevertheless, it illustrates why – first – the money supply is larger than the money created by the central bank and – second – the banks' money supply potential is limited.

Figure 9. The money market in credit channels
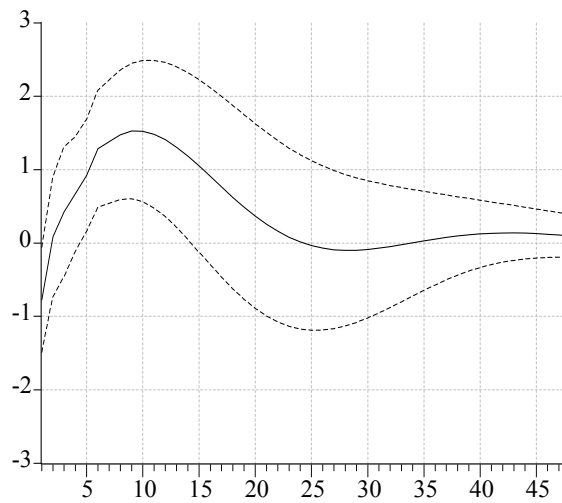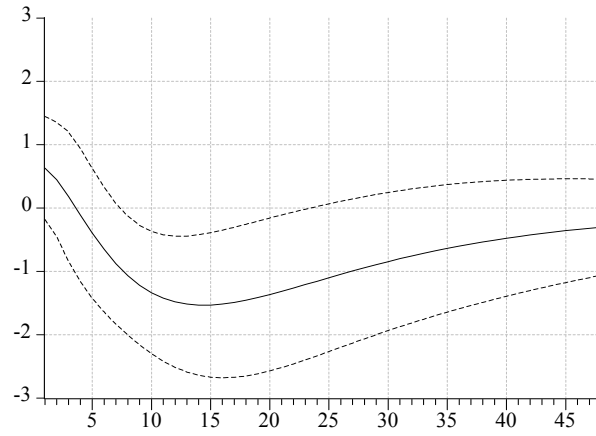
Source: own

4. Analysis of monetary transmission mechanism in Poland

4.1 Credit channel

The impact of monetary policy on the real economy operates through various channels. Under the conventional approach, referred to as the 'money view', monetary policy influences the economy *via* the interest rate. The alternate channel, that emphasizes credit conditions as the route of monetary transmission, is of relatively recent origin and is referred to as the 'credit view'. Genesis of the credit view could be traced to the celebrated work of Bernanke and Blinder (1988), which presented the IS-LM framework augmented with bank-intermediated loans. It argued that since loans and bonds are not perfect substitutes, monetary policy operates not only through the conventional money channel but also through the credit channel. According to the 'credit view', a change in monetary policy that raises or lowers open market interest rates tends to change the external finance premium in the same direction. External finance premium is the difference between the cost of funds raised externally and the funds raised internally. Because of this additional effect of policy on the external finance premium, the impact of monetary policy on the cost of borrowing and consequently on real spending and real activity is magnified (Bernanke and Gertler, 1995). There are three reasons for which the credit channel is important. First, evidence suggests that credit market imperfections of the type crucial to the credit channel do indeed affect firms' employment and spending decisions. Second, evidence suggests that small firms, which are more likely to be credit constrained, are hurt more by tight monetary policy than their larger counterparts. Third, asymmetric information - the core of credit channel analysis - proves to be highly useful in explaining some other important phenomena: *e.g.*, why do financial intermediaries exist; structure of the financial sector; and why do financial crises occur (Mishkin, 1996).

There are two channels through which credit conditions are expected to affect monetary transmission. First, the 'bank lending' channel, that operates through modulation of bank reserves, is affected by monetary policy. Contractionary/ expansionary policy limits or enhances the ability of banks to lend and thereby reduces/increases investment and output. The second, the 'balance sheet' channel works through net worth of the borrowers. Contractionary

policy would raise interest rates and thereby reduce the value of the collateral and net worth of the borrowers.

This, accordingly, limits the ability of borrowers to borrow and invest. Further, the literature also points out a direct connection between the balance sheet channel and housing demand by features such as down-payment requirements, up-front transaction costs and minimum income to interest payment ratios. However, empirical evidence suggests that effectiveness of the credit channel depends upon conditions such as existence of bank-dependent borrowers, for instance, small and low net worth firms (Gertler and Gilchrist, 1993 and 1994), substitution between retail and bulk deposits and ability of the central bank to constrain banks' potential to lend.

Empirical work to draw inferences on the existence of the credit channel in India is rather limited. A recent study examining the impact of financial liberalization shows that banks in general are constrained in their lending operations by the availability of insured deposits and these constraints are more severe for those banks that lend predominantly against collateral. In India more than eighty five per cent of bank lending is against collateral. This implies a potentially important influence of the bank lending channel. A very recent attempt in estimating the bank lending channel has brought out a number of facets of the transmission mechanism - by employing structural VAR methodology on monthly data for all the Indian scheduled commercial banks spanning from April 1993 to April 2002 (Pandit, *et al*, 2006). First, the study validates the existence of a bank lending channel in the Indian context. This implies that the central bank, while formulating monetary policy, is likely to encounter independent shifts in the loan supply. Second, evidence seems to point to the fact that large banks with a wider resource base can more successfully insulate their loan supply from contractionary policy shocks *vis-à-vis* small banks. Third, the quantitative instruments such as the cash reserve ratio (CRR) continue to be important along with the price instruments such as the Bank Rate. Finally, prudential regulations have an important role to play in influencing lending decisions of banks.

In particular, the introduction of capital adequacy ratios has made banks more concerned with the risk-return profile of loans, since additional lending warrants augmenting of capital base in order to adhere to the regulatory capital standards.

Credit markets have, historically, played a crucial role in sustaining growth in almost all countries, including advanced countries, which now have fully developed capital markets. Credit markets perform the critical function of intermediation of funds between savers and investors and improve the allocate efficiency of resources. Banks, which are major players in the credit market, play an important role in providing various financial services and products, including hedging of risks. Credit markets also play a key role in the monetary transmission mechanism.

Extension of credit, however, also poses some risks, which range from pure credit risk to the risk of over-lending. While pure credit risk is the risk of loss due to non-payment by the borrower, even though adequate precautions are taken at the time of loan origination, the risk of over-lending arises when banks extend loans without appropriate credit appraisal and due diligence on account of excessive optimism about future prospects. While pure credit risk may not be widespread and may normally not create systemic problems, over-lending is unsustainable and potentially destabilizing for the system. regulators in all countries, therefore, while seeking to maintain adequate growth, guard against its adverse impact by instituting appropriate regulatory and supervisory policies and strengthening of prudential norms.

The credit market in Poland has traditionally played a predominant role in meeting the financing needs of various segments of the economy. Credit institutions range from well developed and large sized commercial banks to development finance institutions (DFIs) to localized tiny co-operatives. They provide a variety of credit facilities such as short-term working loans to corporates, medium and long-term loans for financing large infrastructure projects and retail loans for various purposes. Unlike other segments of the financial market, the credit market is well spread throughout the country and it touches the lives of all segments of the population.

Prior to initiation of financial sector reforms in the early 1990s, the credit market in India was tightly regulated. Bank credit was the principal focus of monetary policy under the credit planning approach adopted in 1990-93-68. In the absence of a formal intermediate target, bank credit – aggregate as well as sectoral – came to serve as a proximate target of monetary policy. Monetary policy up to the mid-1990s was predominantly conducted through direct instruments with credit budgets for banks being framed in sync with monetary budgeting. The credit market was characterized by credit controls and directed lending. While commercial banks catered largely to the short-term working capital requirements of industry, development finance institutions focused mainly on long-term finance. Competition in the credit market was also limited. This led to several inefficiencies in the credit market.

A wide range of regulator y reforms, therefore, were introduced as part of financial sector reforms in the early 1990s to improve the efficiency of the credit market. As a result, the credit market in India has undergone structural transformation. Credit institutions now offer a wide range of products. They are also free to price them depending on their risk perception.

In most countries, both the systems exist even as one system may be more dominant than the other. However, of the two systems, credit institutions have the distinct advantage in information gathering and processing to monitor the efficiency and productivity of projects. In fact, in recent years the existence of banks, which are the major players in the credit market, is attributed more to their information gathering capacity arising out of the existence of asymmetric information and moral hazard problems, than to the classic explanation relating to their ability to mobilize savings and channeling them into investment. Savers usually have incomplete information on the affairs of companies, which makes it more difficult for companies to obtain direct financing from the market. Intermediation by banks mitigates such agency problems. When the cost of acquiring information on a company by the providers of financial resources is high, the process of financing companies can be done more efficiently if the prospective investors are able to delegate the collection of such information to a specialized organization (Diamond, 1984). Thus, financial intermediation is justified on the grounds of information gathering and company-monitoring functions performed by banks. By

reducing the costs of acquiring and processing information, financial institutions encourage mobilization of savings and improve resource allocation. Banks can also persify risk among a number of companies.

Firms in developing countries generally tend to rely more on debt finance, including bank credit. The emphasis on credit rather than equity arises due to various reasons. The cost of equity in developing economies is often much higher than the cost of debt due to the existence of higher perceived risk premia than in developed countries. The existence of artificially repressed interest rates contributes further to the problem. The other reasons for the heavy reliance on debt in developing countries include the fragility of their equity markets, lack of suitable accounting practices and the absence of adequate corporate governance practices. Given the high dependence on bank credit and lack of substitutes for external finance, firms in developing economies are generally highly sensitive to changes in the cost and flow of credit.

Credit markets in developing countries, in particular, play an important role, where apart from industry, agriculture is also an important segment of the economy. Besides, there are also a large number of small and medium enterprises in the industrial and service sectors, which are not able to access the capital market and have to depend on the credit market for their funding requirements. Thus, the importance of banks and other lending institutions in developing countries can hardly be overemphasized.

Commercial banks, given their preeminent position in the regulated financial sector, dominate the credit market. The quantity of loans created by the banking system is generally a function of both the willingness and ability of banks to lend. In an economy with ceilings on lending rates, banks face a higher credit demand than they can effectively supply, thus, necessitating reliance on a credit rationing mechanism. In a non-repressed financial system, on the other hand, the borrowers are, in principle, differentiated along the lines of risk characteristics and riskier borrowers are charged higher interest rates to account for default probabilities. This, however, may create the problem of adverse selection. Though riskier

projects bring higher returns, banks, out of sustainability consideration, need to optimize the risk of their portfolio.

Another important factor influencing the supply of credit is the amount of reserves available from the central bank to the banking system. A large pre-emption of central bank money by the Government may constrain reserve supply to the banking system, thus, affecting their capacity for credit creation. Moreover, credit expansion could also be an endogenous process, *i.e.*, it is the demand for credit that may drive the banking system's ability to create credit in the economy.

Development of the credit market plays an important role in the monetary transmission mechanism. The traditional interest rate channel, represented by the 'money view', mainly focuses on the liability side as banks create money through chequable deposits. The asset side is not emphasized as firms' financial structure is believed to be neutral to borrowings through loans from banks or through issuance of securities. This is based on the assumption that different financial assets such as bonds and bank loans are perfect substitutes. However, in terms of 'credit view', bonds and bank loans are not seen as perfect substitutes primarily because of information asymmetries. Firms facing informational problems find it more expensive to borrow through bonds than availing loans from banks.

Figure 10. Poland Household Credit
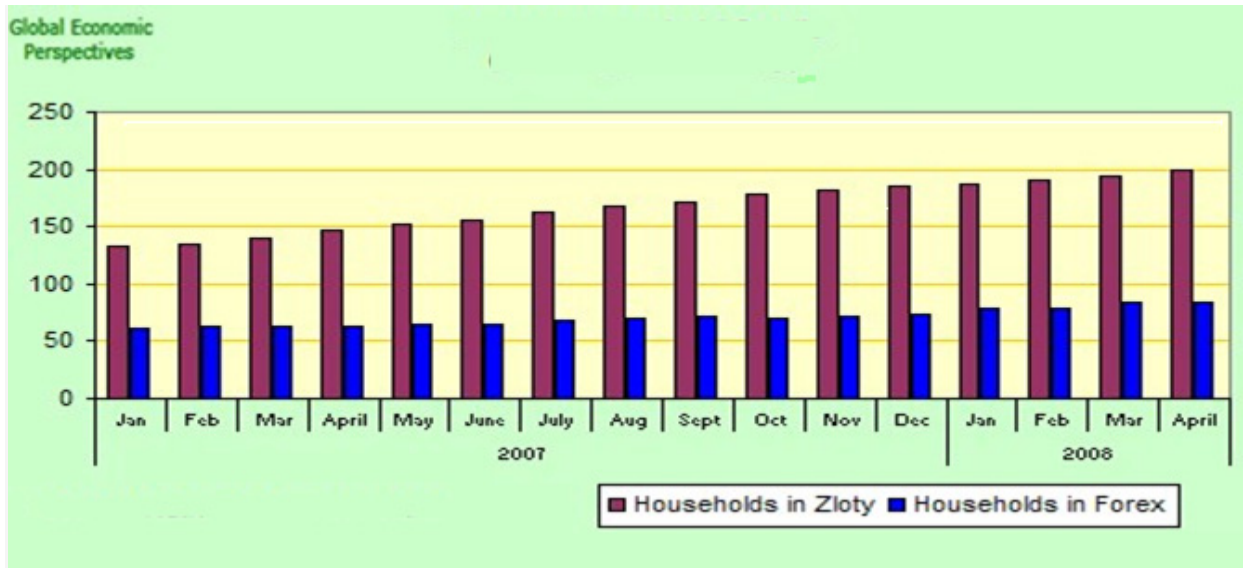
Source: National bank of Poland

4.2 Inflation expectations channel

In September 1998 the Monetary Policy Council approved the Medium-Term Monetary Policy Strategy for 1999-2003. This document provided for a transition of Poland to the regime of direct inflation targeting. Confidence in the possibility of a direct impact on inflation rates was reinforced in 1998 when inflation (December to December CPI) was 8.6% when laid in the direction of monetary policy indicator is 9.5%. It was decided to establish a long-term benchmark of inflation - less than 4% by 2003 and short-term - Corridor 8-8.5% for 1999 (updated in March 1999 - 6,6-7,8%). As an indicator of inflation, it was decided to choose a change in the CPI from December to December.

A key parameter of the impact on inflation rates have been elected. The main tool is the impact of open market operations with government securities and obligations issued by the National Bank. Among other money market instruments may be mentioned Secured Loans to

commercial banks and the ability to raise funds on deposits. The National Bank also remains a member of the foreign exchange market. Required reserve ratio in 1999 was strongly reduced, and in September was 5% for deposits in zloty and foreign currencies.

As for inflation, it declined steadily since 1990 (249.3%) until 1998, when she first fell below double-digit mark (8.6%). But then the downward trend in inflation is temporarily stopped, indicating that the low effectiveness of the monetary policy, the main purpose of which put the achievement of specific numerical inflation target (Figure 11).

Figure 11. Inflation in Poland 1991-2002
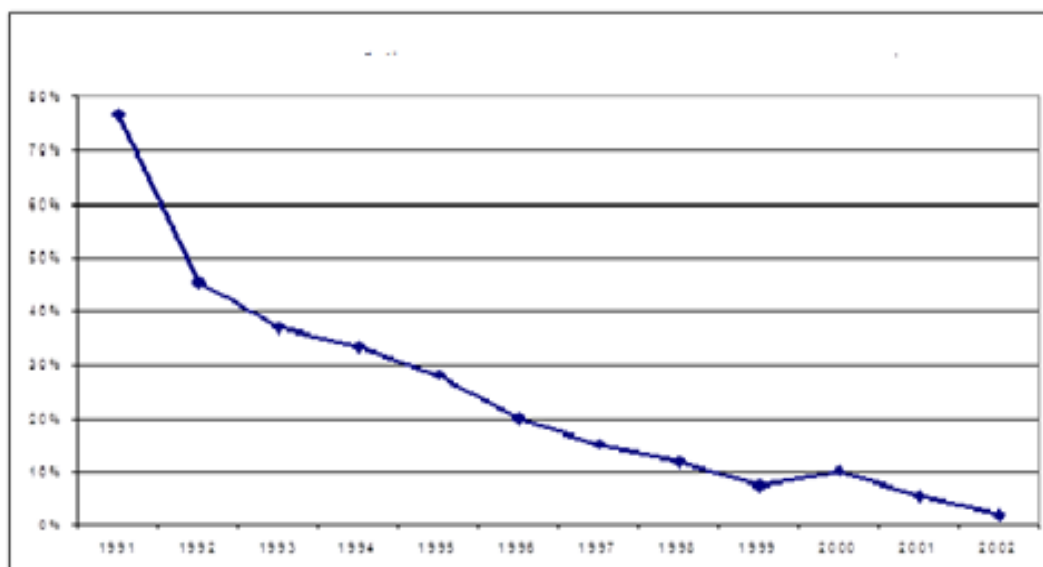
Source: International Financial Statistic

Table2. Inflation targets and their achievement in Poland in 1998-2002

	1998	**1999**	**2000**	**2001**	**2002**
Target, %	–	6,6–7,8	5,4–6,8	6–8	4–6
CPI (on December),%	8,6	9,8	8,5	3,6	0,8

Source: NBP

In 2002, the downward trend in inflation continued. In December, inflation is relative to the corresponding period in 2001 was 0.8%, i.e. was below the lower boundary of the planned corridor. The situation, as we have seen somewhat similar pattern was observed in the Czech Republic. Macroeconomic implications of this transition quite ambiguous. By results of 2001 indicated a significant decline in economic growth (from 4.0% in 2000 to 1% in 2001) and the decline of investments (12%). The budget deficit has grown. In this connection it should be noted tensions in the relationship between the National Bank and the government. In 2002, as in the previous year, the National Bank acts as an outspoken critic of the project budget, pointing to the wrong, according to the Bank's expenditure policy.

As the zloty exchange rate, then say that there are consistent trends are not necessary. Periods of currency appreciation followed by periods of price reduction.

The inflation rate in Poland was recorded at 3.6 percent in May of 2012. Historically, from 1992 until 2012, Poland Inflation Rate averaged 10.9 Percent reaching an all-time high of 46.5 Percent in April of 1992 and a record low of 0.3 Percent in April of 2003. Inflation rate refers to a general rise in prices measured against a standard level of purchasing power. The most well-known measures of Inflation are the CPI which measures consumer prices, and the GDP deflator, which measures inflation in the whole of the domestic economy (Figure 12).

Figure 12. Poland inflation rate
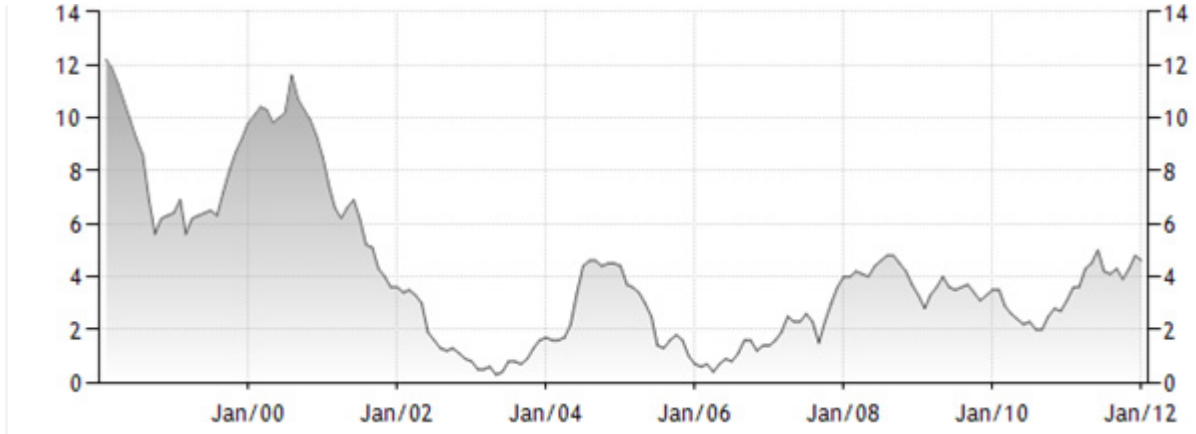
Source. Central Statistical Office

4.3 Exchange rate channels

According to the claim of the National Bank of Poland, "the basic objective of monetary policy is maintaining price stability; stable prices are an indispensable element of constructing solid foundations for long-term economic growth". Since 1999 the direct inflation target strategy has been utilized in the implementation of monetary policy. Exchange rate regime is Independently Floating.

From 1990 to 1998 Poland has built its monetary policy to a fixed exchange rate regime in various forms. At the same time were given guidance on the dynamics of money supply M2. Since October 1992 the exchange rate regime based on a system of constant devaluation (since May 1995 as a tilt of the currency corridor), the Polish zloty was pegged to a basket of 5 currencies (from 1 January 1999 the euro and the dollar).The tendency of changes in exchange rate policy was to reduce the angle of inclination (from 1.8% per month in 1992 to 0.3% in 2000), which was in accordance with the desire of the authorities to reduce

inflation and expand the boundaries of the corridor. In 1998-1999. Width of the band gradually changed from 14 to 30% around the central value wide corridor continued to exist after the promulgation of the 1998 inflation targeting regime until its abolition in April 2000, when it was taken a formal decision on the transition of Poland to a floating exchange rate.

The USDPLN spot exchange rate appreciated 0.0284 or 0.82 percent during the last 30 days. Historically, from 1993 until 2012, the USDPLN averaged 3.2900 reaching an all-time high of 4.7100 in October of 2000 and a record low of 1.7200 in June of 1993. The USDPLN spot exchange rate specifies how much one currency, the USD, is currently worth in terms of the other, the PLN. While the USDPLN spot exchange rate is quoted and exchanged in the same day, the USDPLN forward rate is quoted today but for delivery and payment on a specific future date (Figure 13).

Figure 13. USDPLN Poland zloty exchange rate
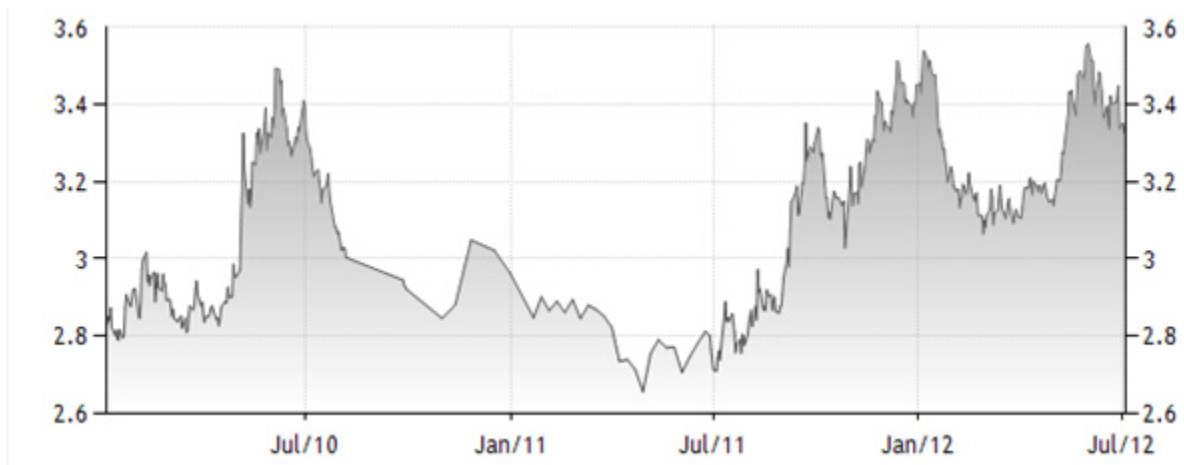
Source: OTC Intra Bank

The decision to change the regime of monetary policy was not due to any pressure or attack on the exchange rate. The average rate of the zloty in 1997 exceeded the central value

of 0.9% and in 1998 by 5.6%. In 1998 had a record growth of official reserves - from 20.7 billion to 27.4 billion dollars. The change in policy was caused not by any objective prerequisites, but rather the fear that the maintenance of a fixed exchange rate with the increasing openness of the economy and rising capital inflows can lead to destabilization of the money supply. Targeting monetary aggregates also does not provide price stability due to unpredictable changes in the velocity of money and the possible instability of the currency market. Explicit targeting and the exchange rate and money supply can lead to permanent conflict between the goals. The risk of external shocks and demanded a more flexible form of organization of monetary policy. Some inferences about the exchange rate movements can be made from the Figure 14.

Figure 14. Exchange rates in selected countries for 1M'1998 – 11M'2007
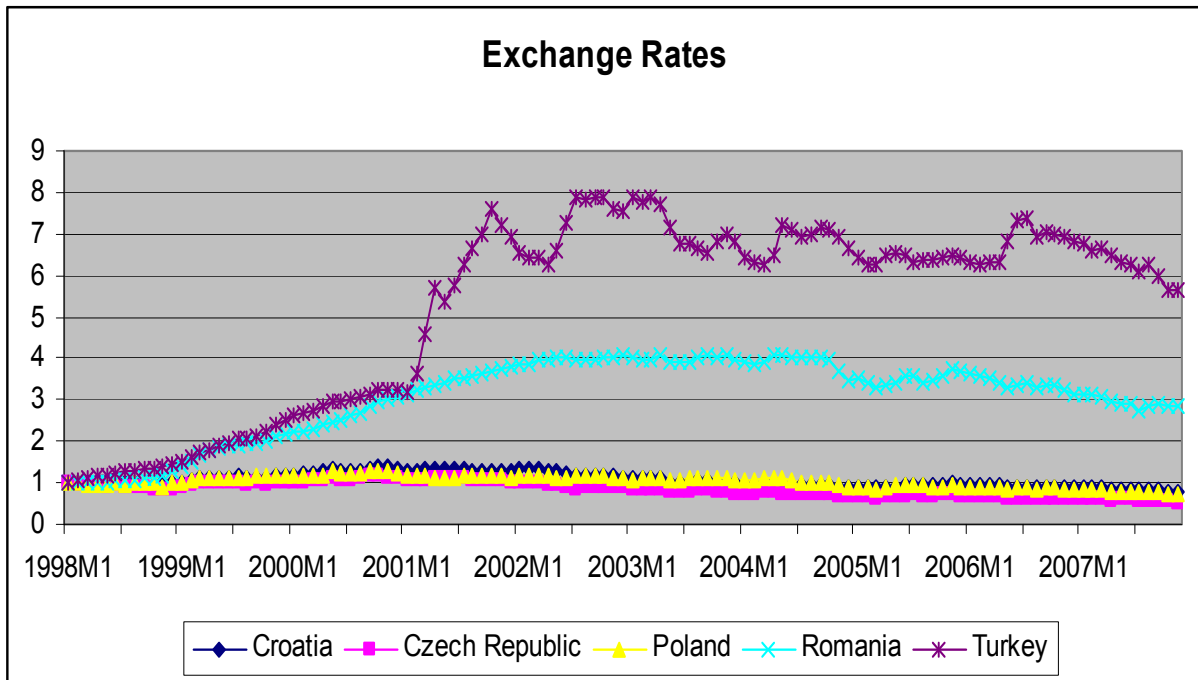
Source: International Financial Statistics

Each individual exchange rate series is divided by the first value, thus all series start from one but we can see the movements with time. The common tendency to appreciate with time is observed for Croatian, Czech and Polish national currencies in the analyzed period. The same is true for Romanian and Turkish currencies after 2001, but before that, these countries experienced a period of drastic local currency depreciation accompanied with the huge increase in Money supply as can be seen on the (Figure 15) analogously each time series is divided by the first value.

Figure 15. **Money supply in selected countries for 1M'1998 – 11M'2007**
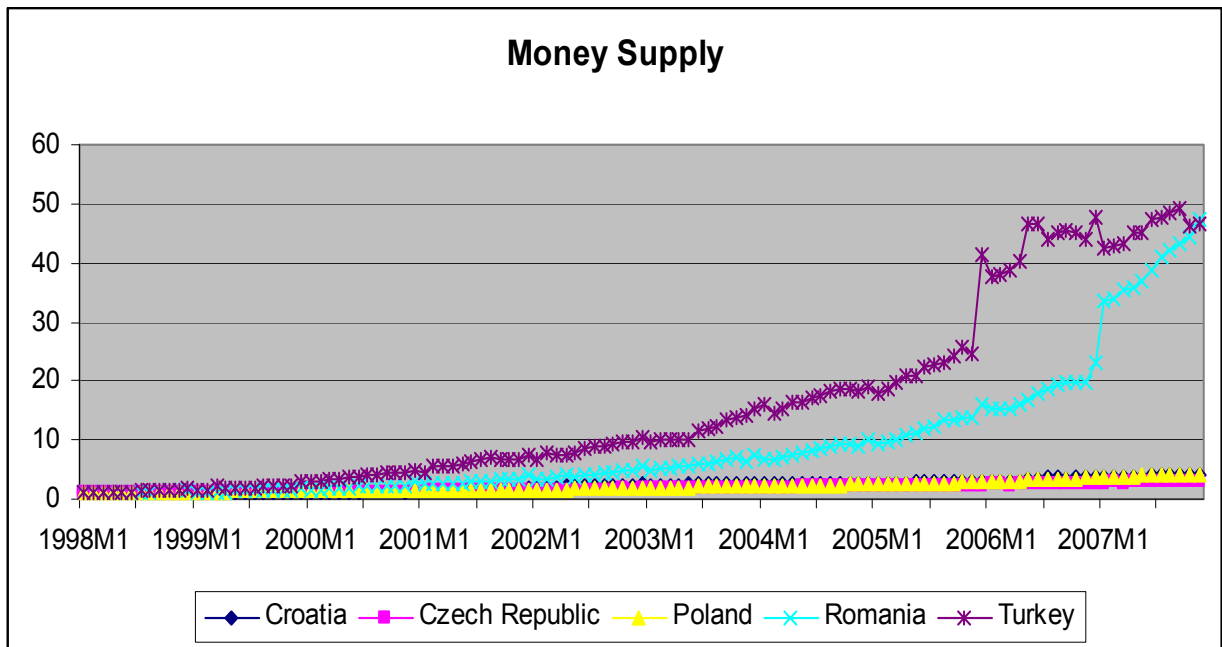
Source: International Financial Statistics

According to the Turkish laws, "the primary objective of the Bank shall be to achieve and maintain price stability. The Bank shall determine on its own discretion the monetary policy that it shall implement and the monetary policy instruments that it is going to use in order to achieve and maintain price stability. The Bank shall, provided that it shall not be in

confliction with the objective of achieving and maintaining price stability, support the growth and employment policies of the Government" The exchange rate regime is Independently Floating.

4.4 Interest rate channel

In most advanced economies, policy rates remain at their effective lower bounds. They have been stuck there for three years now (Graph 1). And central banks have discouraged expectations that they will raise them any time soon. In real terms, policy rates have been essentially negative for almost two years.

In emerging market economies, policy rates were raised modestly in the past year from their crisis troughs as the domestic recoveries gained traction. But inflation also picked up. And in some countries, policy rates have recently been cut in response to Europe's economic and financial troubles. Taken together, real policy rates have been and remain very low.

In the traditional interest rate channel an increase in the short term central bank interest rate leads to an increase in longer rates deposit and loan rates as well as yields on Treasury bills and bonds and to a dip in equities and real estate prices. In the world of sticky prices an increase in nominal rates leads to an increase in real rates. An increase in investment cost depresses investment, while consumption falls due to both wealth effect and substitution effect. As a result, total output declines, bringing down the inflation rate. In short, for the interest rate channel to be operative the central bank must have a possibility to control the short-term interest rate, prices need to be sticky, and finally output should react to real rates.

According to the credit channel theory of monetary transmission, monetary policy has a direct effect on aggregate spending that does not operate through the traditional interest rate channel. The main assumption is that banks play a special role in the financial system, since they are especially well suited to deal with certain types of borrowers, in particular small enterprises and households whose access to the capital market is difficult.

Monetary contraction drains reserves and reducing banks, lending ability, has an impact on bank-dependent borrowers. As a result of the tightening of monetary policy, credit allocated to bank-dependent borrowers may fall, making these agents cut their spending (Hubbard (1994).

The credit channel is not a separate, independent alternative to the traditional interest rate channel, but rather a set of supplementary factors that amplify and propagate it (Ramey (1993). The direct effects of monetary policy on interest rates in the banking sector are amplified by endogenous changes in the external finance premium, which is a difference between the cost of funds raised externally (by issuing equity or debt instruments) and funds generated internally

(by retaining earnings). There are two basic explanations why actions taken by the central bank stresses the impact of monetary policy on borrowers, balance sheets and their wealth, which constraints their debt capacity. The second, the bank lending channel, focuses on the possible effects of monetary policy actions on the loan supply.

In the bank lending view, banks play a critical role in the transmission of monetary policy actions to the real economy. Changes in monetary policy generate adjustments not only in interest rates, but also in the banking sector balance sheet. Walsh (2003) points out that the ultimate effects on bank deposits and the supply of money are reflected in adjustments to the liability side of the banking sector´s balance sheet. The effects on banking-sector reserves and interest rates also influence the supply of bank credit, the asset side of the balance sheet.

The benchmark interest rate in Poland was last reported at 4.75 percent. Historically, from 1998 until 2012, Poland Interest Rate averaged 8.5200 Percent reaching an all time high of 24.0000 Percent in February of 1998 and a record low of 3.5000 Percent in September of 2010. In Poland interest rates decisions are taken by the National Bank of Poland (Narodowy Bank Polski, NBP). The official interest rate is the discount rate which refers to end of period refinancing rate. It is the annual rate offered to commercial banks by the National Bank of Poland (Figure 16).

Figure 16. Poland interest rate

Source: National Bank of Poland

The broad credit channel is not restricted to the bank lending channel. The balance sheet channel stresses the importance of costs associated with information asymmetries and the inability of lenders to monitor borrowers costless. As a result, cash flow and net worth become important factors affecting the cost and availability of finance and the level of investment spending. The main idea of the balance sheet channel is that the external finance premium depends inversely on a borrowers creditworthiness, which in turn depends on macroeconomic conditions and therefore on the monetary policy (de Bondt (1999). In particular, contractionary monetary policy that produces an economic slow-down reduces firm cash flow and profits, and by weakening creditworthiness increases the external finance premium generating a so-called financial accelerator effect. Financial accelerator effects can arise from the adjustment of asset prices to contractionary monetary policy.

Borrowers may be limited in the amount they can borrow by the value of their assets that can serve as collateral. A rise in interest rates that lowers asset prices reduces the market volume of borrowers collateral. This reduction in value may then force some firms to reduce investment spending as their ability to borrow declines. (Walsh (2003).

5. The effectiveness of transmission channels in Turkey and Poland

A major task of central banks is to conduct monetary policy. This usually implies issuing currency, holding country's foreign reserves, acting as banker to the government, serving as a lender of last resort, and, most importantly, controlling the money supply. Traditionally, this policy was aimed at achieving six basic goals: high employment, economic growth, price stability, interest-rate stability, stability of financial markets and stability of foreign exchange markets. Some of these goals are consistent with each other, some are preconditions for the others, and some are mutually conflicting. For example, inflation that is either too high or too low (especially deflation) can hamper growth, increase unemployment, and threaten the stability of financial and foreign exchange markets. Thus, maintaining inflation at an appropriate level should be a principal objective of central banks.

To guide themselves to their goals, central banks typically target three price and quantity variables: exchange rates, monetary aggregates, and inflation rates (in this latter case, the target is the same as the goal). All three targets are transparent for the public. They are relatively easily understood and send clear signals to the public and markets about current monetary policy and expectations concerning price stability. To achieve their targets, central banks typically use three instruments: open market operations, the central bank discount rate, and bank reserve requirements.

Exchange rate targeting often involves anchoring the domestic currency to a foreign currency that is expected to remain relatively stable. If this target is credible, inflation expectations should fall and the inflation rate should decline. The cost of such targeting may, however, be significant. In particular, the domestic central bank largely loses control over national monetary policies. Its money creation capacities become constrained by a foreign policymaker. Moreover, it risks speculative attacks on its exchange rate. While a developed market economy typically has relatively flexible factor and product markets, developing and transition economies may lack this flexibility that is may lack shock absorption capacities - and hence may suffer serious consequences from an inflexible exchange rate regime.

Monetary aggregate targeting enables monitoring of a central bank's performance (though not achievement of its ultimate goals) and thus promotes accountability of policymakers. It also helps to form inflation expectations. However for useful monetary targeting, strong relationships between monetary aggregates and inflation should exist. Financial innovations, brought about by improved information technologies and the development of new financial instruments and techniques, have blurred the distinction between monetary aggregates. This complicates monetary policy by making it less predictable and, thereby, less accountable. Moreover, if money velocity is unstable (as it is frequently the case in the transition countries), the relationship between monetary targeting and inflation remains weak, and thus monetary targeting is not very effective.

Inflation targeting has become popular over the past decade, and enjoys the important advantage that the public can directly monitor achievement of an ultimate goal. It makes central banks clearly accountable and helps reduce outside pressures on the conduct of monetary policy. Like monetary aggregate targeting, it preserves flexibility of the exchange rate and thus an automatic mechanism for adjusting to shocks to the domestic economy. Also, velocity shocks become less destabilizing since no fixed relation between money aggregates and price changes is assumed. The main problem is that the central bank does not directly control the movement of prices: there are substantial time lags between policy measures (instrument changes in response to inflation indicators) and their effects on inflation.

5.1   The effectiveness of monetary transmission channels in Turkey

The Turkish economy is growing rapidly, and is becoming increasingly market-based and more open. As a result, Turkey needs to deal with a much more complicated economic situation. In this context, the ability to conduct macroeconomic management is critical for ensuring sound, rapid and sustainable growth, and the effectiveness of monetary policy has also taken on greater importance. At the current stage of development, Turkey needs to employ monetary policy to accommodate four broad objectives, i.e., price stability, growth, full employment and balanced BOP account. Exchange rate policy has played a role in

achieving these macroeconomic objectives. It also has an impact on Turkish competitiveness, trade relations and resources allocation.

Turkey adopted a number of structural reforms following its 2000-2001 financial crises. Key features of these reforms are a change in the conduct of monetary policy and greater central bank independence. This study investigates the impact of these reforms on the monetary transmission mechanism in Turkey. The results demonstrate that the monetary transmission mechanism gains strength following the structural break in 2001.

Estimates of a baseline model indicate that an unanticipated increase in interest rates affects aggregate economic activity both before and following the crisis in the expected way. However, the impact of an unexpected interest rate shock is larger, faster and more persistent in the post-crisis period. A policy shock increases prices in the pre-crisis period. This result, known as the "price puzzle", is widely found in empirical studies for many other countries. The price puzzle for the emerging countries such as Turkey may also be due to a "cost channel" of monetary transmission. Increases in interest rates increase costs for firms that depend on short term borrowing for working capital needs. Firms pass on these cost increases in their prices. In other words, the existence of the persistent price puzzle in the pre-crisis period suggests that firms adjust their prices rather than output in response to interest rate shocks.

Exchange rates are an important channel of monetary transmission both before and after the crisis. The strength of the exchange rate channel has increased following the crisis and the switch to a floating exchange rate, while exchange rate passes through decreased at the same time. Policy shocks affect output more quickly and stabilize more quickly in the post-crisis period when exchange rates are added to the model.

The asset price channel is weak in both periods. The responses of output and asset prices to interest rate shocks are not intuitive in the pre-crisis period, as output and asset prices increase after a policy shock. In the post-crisis period the results are as expected.

The credit channel is found to be weak and working only in the short run in the pre-crisis period. Although the short data span after the structural reforms limits the analysis, the effect of the credit channel appears to have increased the post-crisis period. It was expected that improved operation of credit markets would strengthen the credit channel following the reforms, a result that is confirmed by the empirical results (Basci et al., 2007).

Two approaches are used to test the strength of the interest rate channel. The first approach includes an additional interest rate variable in the model. The impact of the additional interest rate variable is weak, but somewhat stronger in the post crisis period. The second approach assumes that the effect of the interest rate channel is the effect of the policy interest rate when holding constant the effects of the other channel variables. This methodology finds a much stronger interest rate channel, and the strength increased considerably following the monetary reforms.

The results strongly support the importance of central bank independence and a credible monetary policy. The policy reforms following the financial crisis granted the central bank greater independence and allowed the pursuit of a credible monetary policy using a short-term interest rate. The reforms have increased the ability of the central bank to stabilize output, since the effects of monetary policy on output, especially interest rates and exchange rates, have strengthened considerably since the reforms. Whereas monetary policy affected prices more in the pre-crisis period, now policy has strong and persistent effects on real output. Turkey's policy reforms appear to have been successful, making monetary policy more credible and a more effective stabilization tool.

Monetary policy is one of the important means through which Turkey manages the economy. Its effect is transmitted through the financial system, the core of a modern economy. The effect of monetary policy is not limited to one sector or one area. More broadly, it is felt in every part of the economy and affects individual economic behaviors at the micro-level. In this sense, monetary policy carries more system-wide implications and is more systemically important than exchange rate target. Monetary policy flexibility and effectiveness are particularly important under Turkish unique circumstances. As a big developing country

undergoing reform and transition. More specifically, monetary policy also has various objectives, including managing inflation, supporting growth, promoting a balanced BOP account, boosting employment and facilitating financial reform. This fact highlights the importance of making flexible and effective monetary policies.

The Turkish economy was put under critical test since the global financial crisis began to unfold in the second half of 2008. To deal with the extremely complicated situation both at home and abroad, the government implemented a proactive fiscal policy and relatively easy monetary policy, and adopted a comprehensive policy package. The economy was among the first to recover in the world. In response to the rapidly changing situation, the government decided to focus on making substantial progress in shifting the development pattern, and make sure that progress in this front is in line with the objective of supporting sound and rapid economic development, so that the two facilitate and reinforce each other. This leads to potential risks of heightening inflation expectation and asset speculation. In this context, economic policy makers need to carefully balance the relations between supporting sound and rapid growth, restructuring the economy, and managing inflationary expectation.

At present, a more flexible exchange rate regime will help curb inflation and asset bubbles. When domestic inflationary pressures are heightened, a stronger domestic currency will help bring down the price of imports. The role played by exchange rate in easing imported inflationary pressures is particularly important for a country like Turkey that has a robust demand to import primary products due to unfavorable resource endowment.

The money market and foreign exchange market have developed both in breadth and in depth. Adapting to more flexible exchange rate, financial institutions have strengthened risk management, improved financial services and come up with more product innovation. These have helped improve the transmission of monetary policy at the micro and market levels and played a positive role in enhancing the effectiveness of monetary policy.

The global financial crisis has made significant adjustments in the channels of transmission mechanism monetary policy (TMM), many central banks (CB) in both developed countries and emerging markets. In the credit crunch traditional channels TMM ceased to

function and transmit impulses CPL affecting the economic activity of the private sector and households. This has prompted many to turn to the Central Bank monetary policy measures, which are not used in the pre-crisis period.

In this research the author of the features of TMP measures and instruments of monetary policy applied by the Central Bank in Turkey and Poland implementing anti-crisis program to stimulate the national economy during the global financial crisis.

The current financial crisis has greatly affected the channels of TMP and the process of choosing appropriate measures of monetary policy that can satisfy the national financial (in other countries - banking) system with liquidity in an amount sufficient to restore the normal functioning of markets, money and capital markets.

Before the crisis, the main channel of TMM, which the Central Bank used in the process of monetary policy, was the channel of interest rate. With the global financial crisis the credit markets virtually ceased to function, so the interest rates imposed on transactions of securities ceased to transmit pulses of monetary policy and the impact on economic activity of the private sector and households. At a time when "price" parameters of financial assets (interest rates) have ceased to serve as transmission mechanisms, the Central Bank were forced to work on markets by changing the "quantitative" parameters, ie proposal to increase both national and foreign liquidity. Central Bank began to implement a wide range of measures and tools that are now Western experts described as "unconventional".

In the current debate, the term "unconventional" monetary policy measures are widely used in Western literature, but among the professionals did not work out a common understanding of its contents. The literature presents two fundamentally different approaches to understanding the nature of unconventional monetary policy, implemented during the current financial crisis. Proponents of the first approach believe that the applied measures are unconventional, as distinct from measures of monetary policy used by the Central Bank under normal conditions. In turn, carried out in the relief of crisis unconventional measures can be classified according to the purposes and methods of application. Proponents of the second approach believe that applied in times of crisis measures are not measures of non-traditional in

nature. For example, in 60-70s, such measures were considered "canon" TMM monetary policy. But now they can be defined as unconventional, as in their application of the Central Bank act on unusual financial market segments.

In general terms, unconventional monetary policy measures in the framework of a joint anti-crisis program of the Central Bank and Government of the impact on the national economy through the promotion of financial markets included three areas:

- Changes in the structure of the balance sheets of the Central Bank, which balances were not separate legal entities, and have been transformed into part of the overall balance of the public sector;

- The implementation of credit and quantitative easing: in particular, they were used to reduce credit spreads on certain financial transactions (for example, deals with the obligations of construction companies or securities secured by mortgages) as well as to reduce the base rate of return or to stimulate economic activity. In this case, used mainly direct and unsterilized purchases of government securities (in some countries - the list of securities purchased obligations was fairly wide);

- Foreign exchange transactions (the injection of foreign currency on the domestic market, including through currency swaps between the CB).

Within these areas of joint action of the Central Bank and Government at the national economy through the promotion of financial markets, applied measures and instruments of monetary policy can be divided into the following groups.

The Central Bank of Turkey and Poland eased reserve requirements for overcoming the shortage of domestic liquidity, including a reduction in required reserves, the introduction of new rules of the averaging provision, expanding the list of permitted exceptions in the calculation of reserve requirements. In most cases easing of reserve requirements is not accompanied by a decrease in political interest. This meant that the Central Bank sought to increase the supply of liquidity, rather than change the nature of monetary policy.

During the relief of the acute phase of the global financial crisis, this set of measures was the most common. Central Bank in Turkey and Poland eased the terms of liquidity, including the extension of the terms of refinancing operations, lowering the requirements for ensuring taken, increasing the frequency of credit auctions. Several priority of the Central Bank provided liquidity to financial institutions, which then had to put it on the market.

Government measures to direct the allocation of liquidity. In some cases, in Turkey an additional allocation of national liquidity was carried out by the budget. To do this, apply measures such as placing the budget on the immediate bank deposits of the Government, including government financial institutions, for its subsequent distribution to other credit institutions, deferred tax payments, issuance of special government loans designed to contain only among credit institutions. Turkey government have also changed the public debt management strategy for the saturation of the financial market more liquidity.

National Bank of Poland eased conditions for foreign exchange transactions and enter new transactions (dollar repo and foreign exchange swaps). In such transactions has been expanded list of contractors of the Central Bank, including non-bank financial institutions (such as exporters or importers of essential goods). At the same time, some of the Central Bank reduced reserve requirements on bank liabilities denominated in foreign currencies, and others - have excluded them from the list of liabilities that are subject to reserve requirements.

As a result of these measures, in Poland had to take the place of money and capital markets as an intermediary, transforming public finances in the resources of financial institutions, primarily banks. Buying government debt and making the private sector dependent on government support, the Central Bank are at the center of the conflict of interests between taxpayers and owners of financial institutions. Central Bank faced with the danger of losing the operational independence to conduct monetary policy, focused on achieving the statutory goals of their activities, and involving the use of instruments is mainly indirect monetary impacts.

The velocity of propagation of the global financial crisis has shown that most developed countries, the CB was unprepared for the negative developments in financial

markets. Among the factors which could trigger the development of the global financial crisis, in the literature most often are the following:

- Is too soft nature of monetary policy in major world economies in the pre-crisis period, which contributed to the formation of large global financial imbalances;

- The acceleration of financial globalization and integration of national financial markets, while maintaining or structural weaknesses in national financial systems, or the segmentation of domestic financial markets that has led to increasing the impact of global financial imbalances in the national economy;

- Rapid growth in the prices of real assets that market participants are seen as alternative investments to reduce (hedge) the financial risks and uncertainties;

- Lack of uniform regulation and supervision of the state in domestic financial systems. The focus of national regulatory authorities on the functioning of the banking system and the individual segments of the financial market did not allow time to identify the imbalances in their development, and the continual dissemination of financial innovation (especially transrynochnyh products) contributed to the accumulation of national financial systems of systematic risk;

- Lack of mechanisms for coordination of monetary policy of central banks in different countries, as well as the activity of regulating the activities of financial intermediaries in certain segments of the financial market.

The first traditional anti-crisis measures that the Central Bank implemented the developed countries were in a new environment not sufficiently effective. Among their disadvantages are a Provision of additional securities liquidity to financial institutions in the initial phase of the crisis was of non-market nature and its scope was limited by its own means the Central Bank. As a result, the Central Bank could not solve the problem of shortage of liquidity, but the intervention undermined the credibility of the participants of the interbank market to each other and could not prevent his "half-life."

Two. Pricing in the emergency funds to support the Central Bank to financial institutions was of opaque and non-market nature. On the one hand, destroyed the market competition, on the other - contributed to a conflict of interest between taxpayers and owners of financial institutions.

Three. The introduction of additional guarantees on bank deposits have contributed to the preservation of financial market participants for the propensity of risk strategies. They are also allowed to remain on the market a number of financial institutions, which otherwise could go bankrupt (that did not work "cleaning" function of the crisis).

The expansion of government guarantees on bank deposits were not able to cover the costs of the bankruptcy of systemically important financial institutions.

Provision of state (budget) for emissions of bank guarantees of debt subsidizing weaker banks. This led to the fact that investors were "reset" banking, securities, without such guarantees. As a result, market prices have been distorted.

DCT is an instrument of macroeconomic regulation only if operated channels of TMM. For example, interest rate channel of TMP effective, if short-term interest rate on refinancing operations of the Central Bank (benchmark, or political interest rate) affects the prices of specific financial transactions - market interest rates, exchange of securities, the exchange rate, etc. In this case, controlling the level of political (short term) interest rates, the Central Bank can influence the interest rates on mortgages, corporate loans and other prices, which affect the consumption and investment, and hence on aggregate demand.

But this channel of TMM operates only under certain important conditions, which include as a minimum include the presence of:

- the demand for credit institutions in refinancing from the central bank;

- demand is elastic at this interest rate;

- the effective inter-bank credit market;

- demand for loan products for businesses of banks, financial institutions have enough to please creditworthiness. Without this, the channel TMM does not work.

At a time when political interest rate is reduced to almost zero, the Central Bank of developed countries have been forced to focus on other channels TMM, especially on channels that affect the real economy through quantitative easing, offering a broad credit channel of monetary and capital market channel.

Quantitative easing - a wide range of measures implemented by the Central Bank together with the national government. They include both an increase in securities lending to a wide range of private sector institutions, banks and non-bank institutions, and purchases of bonds of the Ministry of Finance and private obligations guaranteed by the government.

Thus, the example of the Fed can say that part of the monetary policy the Fed has undertaken in conjunction with the U.S. Treasury. In particular, during the recent crisis, announced its program of additional funding (Supplementary Financing Program, SFP), designed to help the fed manage its balance sheet. To sterilize the excess liquidity the Fed, the Treasury conducted its own short-term debt issue of liquidity management (Cash Management Bills) of varying urgency, and was placed deposits with Federal Reserve Banks (FRB).

Central bank in developed countries implement policies quazy management public debt through direct purchases of government securities to reduce the underlying yield curve in the securities market. And the Fed and the Bank of England was carried out large-scale purchases of government debt. Bank of Japan also carried out similar purchases, although they did not pursue the goal of long-term impact on bond yields, and just assumed "mitigating operations in the money market." As a result, the total (public and private) debt in the developed countries during the financial crisis has grown dramatically: in 2009 it increased by 22.7%, and in 2008 - a record 24.2% of GDP. In this case the leader in the debt load among the major economies continued to be Japan (471% of GDP, including 197% of GDP - a purely public debt) Bank of England - the only securities, which pursued a policy of "bank reserves".

Operations of the Bank of England were aimed at increasing the supply of broad money in the deal, which increased bank reserves. In this regard, the Central Bank chose TMM channel other than the interest rate. Bank of England tried to influence the national economy through the "quantity of money supplied otherwise than by their price" .The volume of bank reserves grew in the balance sheets and other securities, including the Fed, the ECB and Swiss National Bank. But they have given an increase in bank reserves was a byproduct of the active operations of the Central Bank.

In a crisis, the Central Bank have been actively developed countries use a broad credit channel for direct impact on market prices of financial assets and short-term interest rates. Thus, the Fed implemented 19 different loan programs as a lender of last resort (for a total of 1 590.11 billion dollars), including: Primary Credit Discount (28,51), Commercial Paper program (42,44), Term Auction Facility (196,02), Term Auction Facility (41,88), GSE Mortgage-Backed Securities (693,60), Commitment to Buy Treasuries (289,22). The common element of these programs was that they were designed to eliminate the limitations caused by the contraction of balance sheets of private financial intermediaries. The deployment of these programs has allowed the fed to achieve narrowing of interest spreads between public and private commitments. As a result, the most financially stable, in terms of private investors, institutions have been able to attract financing from capital markets. While the classical monetary policy targetiruet prices of financial assets (for the Fed is the federal funds rate), crisis was to provide additional liquidity to influence the amount of balance sheet accounts.

Funds through the credit channel TMM comes to the real economy through financial intermediaries (commercial banks and traditional institutions, as they are conventionally defined by experts, the "shadow banking system" - dealers, brokers, issuers, RWA, ABL, ABS, MBS). While the supply of credit is important to understand the motivation of financial intermediaries, as well as the manner in which capital market conditions may affect their behavior. In other words, how the Bank can influence the capital market, which, in turn, will set the size and cost of the proposed loan. Starting point in understanding the supply of credit - the definition of the price of credit services, whose value is directly related to the process of making decisions about their investments, investors delegated financial intermediaries.

Monetary policy and actions of the Central Bank as lender of last resort have an impact on the general conditions of capital markets, changing the structure and scope of the balance sheets of financial intermediaries (total). The increase in lending by the Central Bank against a particular asset class also affects the "price" - reduces interest spreads. As the financial crisis can be interpreted as lack of capacity balance sheets of financial intermediaries, securities transactions can mitigate these deficits. Therefore an increase in volume and changes in the structure of the Central Bank balance sheet accounts that have occurred in the implementation of innovative anti-crisis measures, can be regarded as a substitute for public sector deficits in the balance sheets of the private sector and households.

Monetary channel used as a macroeconomic variables TMP and a long time not used by the Central Bank of the developed countries, the financial crisis began to be used again. In 70 years in the economic literature on monetary policy monetary aggregates were seen as a high purchasing power of money, and their influence on the total amount of the loan was analyzed through the money multiplier. After the start of a global financial market experts have stopped the discussion of these matters.

Under current conditions in the framework of the balance sheets of the Central Bank once again turned to the monetary aggregates by treating them as a source of additional liquidity creation, formed in the capital market. In this mechanism, which determines the amplitude of fluctuations on the capital market, leverage is associated with fluctuations in business entities and the corresponding changes in the markets of secured loans.

Financial intermediaries are often kept long-term assets, short-term secured funding their liabilities. To receive funds, mortgage brokers assets they own, and, having received the funds to invest them in additional assets. However, the limitation of such credit transactions is the level of discount at any of the assets pledged to secure credit or placement attracted debt.

Much of the countries implementing inflation targeting, compared with countries that implement the binding of the exchange rate, monetary injections were carried out They were used by about three quarters of countries that implement inflation targeting.

At the beginning of the financial crisis developed economies to mitigate its monetary policy using traditional tools of crisis management. The transition to unconventional monetary policy measures they have implemented only after the fall of Lehman Brothers (September 2008). Especially the sharp transition to unconventional monetary policy measures was typical for those securities, which prior to the collapse of Lehman Brothers lowered its base interest rates to virtually zero. The rapid contraction of the economies required the adoption of measures to reduce the quality requirements for credit and quantitative easing in early 2009 In 2000, Japan used quantitative easing, establishing a certain level of excess reserves of banks as "operating target". During the current crisis, the Central Bank of the developed countries used quantitative easing, using interest rates or the number of operating as a general purpose.

Securities of emerging markets to September 2008 increased political interest rates, then they use unconventional monetary policy measures, and then the traditional ones. Until September 2008 emerging markets were dealing with an influx of foreign capital, and struggled with inflationary pressures. They began to use unconventional monetary policy measures until after September 2008 in response to a sharp outflow of global liquidity. As the stress on the global dollar market quickly disappeared from the national currency market liquidity, which dramatically increased the cost of foreign financing. This increased the pressure on the exchange rate and led to a change in direction of capital flows. Enterprises not only faced with the problem of shortage of dollars for debt service payments, but their absence to finance imports and service is circulating capital.

Central Bank of developed countries and emerging economies used various measures to provide liquidity. But these measures differ in the implementation tools. Thus, the Central Bank of emerging markets to a greater extent than the Central Bank of developed countries have relied on direct instruments (e.g., reduction in reserve requirements). In developed countries, where interest rates have been reduced almost to zero, the system used to measure the allocation of liquidity by increasing the number of counterparts and lengthening the terms of the Central Bank funding. In some emerging markets were also used similar measures, but on a smaller scale. In developed countries, to provide liquidity in the form of government securities, but none of the Central Bank of emerging markets have not used this tool.

Most developed countries, the CB were based on measures of credit and quantitative easing, while the Central Bank of emerging markets were used selectively. Thus, in early 2009 the Fed and the Bank of England held a large-scale purchases of government securities, the Fed has provided liquidity through a number of special programs. On the contrary, neither the Central Bank of emerging markets, with the exception of Israel, in a relatively short time period (March-August 2009), did not use quantitative easing measures. Only a few securities of emerging markets, using measures that can be attributed to the measures of credit easing.

Differences in the use of unconventional monetary policy measures can be traced through changes in the amount of balance sheet accounts of the Central Bank. It is known that the traditional instruments of monetary policy to mitigate have very limited impact on the amount of the balance sheets of the Central Bank (which reflects the importance of expectations for the channel TMM). On the contrary, most non-traditional measures of monetary policy leads to an increase in balance sheet accounts of the Central Bank. Thus, the weakening of the national provision of liquidity (eg, via increases in operations or expanding the list of counterparts) leads to an increase in bank reserves as the Central Bank and the requirements of the Central Bank to financial institutions. Measures to reduce the requirements for credit or quantitative easing to increase bank reserves at the Central Bank, and the requirements of the Central Bank on government securities and private loans. Currency swaps between the Central Bank to increase their balance sheets. On the contrary, the provision of liquidity in securities (exchange of government securities on the balance sheet of the Central Bank to private papers, which kept the banks) do not change the amount of the balance sheets of the Central Bank. Allocation of foreign currency balance sheet accounts of the Central Bank reduced, although it is often to eliminate the negative effects of such measures of the Central Bank carried out the sterilization of excess liquidity of the national. The volume of the balance sheets of the Central Bank can be seen as a broad gauge the size of unconventional monetary policy measures to mitigate. Weak TMM monetary policy has forced the Central Bank of the developed countries to reduce political interest rates to almost zero. Therefore, the combination of lack of opportunities to further reduce interest

rates and the rapid deterioration of the macroeconomic situation forced the Central Bank to introduce credit and quantitative easing.

Securities of emerging markets were dealing with a less destroyed TMM and their political stakes have not reached zero, but the macroeconomic situation in these countries, in many cases was significantly worse than in developed countries. Thus, interest spreads have increased significantly more than in developed countries emerging markets also experienced a rapid deterioration in economic conditions and reduced growth rate of private investment. The scope of application of unconventional measures was limited to their internal vulnerability and limits the credit capacity of the economy. At almost zero interest rates were reduced in only a few emerging markets, the average interest rate remained at 6%, reflecting the average inflation rate of 5%. Higher degree of external vulnerability can be seen on credit ratings. For instance, Fitch has established long-term average median rating of currencies of emerging markets at the BBB, i.e., at the level of investment. The degree of reduction of interest rate policy in emerging markets was directly linked to their external vulnerability. It is those narrowed the scope in which the securities of emerging markets could increase the supply of national money and credit easing, so as not to cause an outflow of capital.

Credits easing in emerging markets were much smaller. The objectives of monetary policy in a more determined fiscal power than CB. This is especially important for emerging markets, which are characterized by the contradiction between the objectives of pricing, fiscal and financial stability. Anti-crisis measures have shown that in emerging markets, there is general understanding that you should avoid returning to a policy of 70-80s, when the Central Bank independence and lost in a high inflation.

Quantitative easing was less common in emerging markets. First, the financial stress was less severe, the current inflation rate was higher, so only a few countries have reduced policy interest rates to almost zero second, the vulnerability to external shocks demanded that political stakes remained at a level necessary to compensate the holders of foreign currency exchange risks. Otherwise, quantitative easing could lead to capital flight to countries vulnerable to external shocks.

Finally, the use of unconventional measures the Central Bank of emerging markets has revealed complex analytical problems that can only be resolved in the future. Finding the right balance between measures to provide liquidity and foreign national vulnerability-the most difficult problem. Shortage of foreign liquidity can be solved using standard market interventions and direct the allocation of funds, or exchange rate policy.

5.2   The effectiveness of monetary transmission channels in Poland

Poland is an example of a transition economy that began the 1990s with severe macroeconomic problems, and managed to tackle these problems relatively successfully over the next decade. By mid-1989, galloping inflation in Poland had escalated to hyperinflation, after liberalization of agricultural and other retail prices. . Month-to-month inflation exceeded 40%. Pressures to print money were exacerbated by subsidies to food production and to state enterprises that increased the government budget deficit to 8% of GDP. Adding to the strain on the budget, not to mention foreign exchange reserves, was the putative need to service foreign debt that in convertible currencies had exceeded $41 (Kolodko, 1993).[2]

The global financial crisis and sharp contraction of economic activity demanded by the central bank in many countries adopting innovative measures. At a time when the declared political interest rate decreased to zero, the Central Bank began to actively use the account balance for a direct impact on market prices and short-term interest rates. Balance sheets - is part of the consolidated public sector accounts.

In order not to sacrifice the independence of financial and operational independence, the Central Bank was forced into the financial crisis to learn how to isolate the market for bank reserves (controlled by the Central Bank) on the amount of balance sheet accounts. Most of all, it was the Central Bank of developed countries than emerging markets securities.

Poland's monetary strategy since 1990 has been successful in achieving its primary goal of disinflation. Moreover, disinflation has been achieved without paying a high long-term

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[2] This pressure was alleviated by a major Paris Club debt reduction of bilateral government-to-government debt in 1991, followed by a London Club reduction of commercial bank debt in 1994-95.

price in terms of lost output: although output contracted in 1990-91, Poland's real growth since then has been remarkable.[3] Nevertheless the strategy encountered several challenges along the way, and in retrospect might have been improved upon.

A common criticism (e.g., Dabrowski, 1999) is that disinflation was too slow. Indeed, inflation according to the consumer price index, which was 249% in 1990, and reduced to 60% in 1991, was still 30% by 1995 (but by early 2002 stood at 3.5%). The records of the Baltic states were better: they quickly brought inflation down to single digit levels. The common feature of their policies is that monetary policy was anchored to strict exchange rate stabilization.

By contrast, Poland's exchange rate stabilization was compromised, until 1995, by a policy of crawling over-devaluation, the rationale for which was inter alia, to stimulate export demand as well as encourage capital inflows. Indeed the policy so successful in this respect that foreign exchange reserves put severe pressure on the money supply, necessitating sterilization measures in 1995 that came with high quasi-fiscal costs.

Monetary control was also compromised in the early years by pressures for inflationary finance stemming from large budget deficits. And finally, intermediate targets may have been inconsistent, shifting as they did between domestic credit, the monetary base, monetary aggregates and interest rates.

Nevertheless the broad strategy worked: an over-riding goal of disinflation, accomplished initially by exchange rate stabilization, followed by ever-wider exchange rate bands, and culminating with a free float and direct inflation targeting. Likewise, strategies for monetary control worked, in particular the early introduction of a Treasury bill market, which allowed open market operations to begin by 1991- 92. The challenge now is to reduce inflation to 4% or below by 2003 in order to satisfy pre-conditions for EMU and ultimate adoption of the euro.

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[3] Poland's real GDP growth was the highest in Central Europe, reaching 7,5 % in 1995–1997. In subsequent years Poland lost its leading position. Currently real growth is down to 1,0 – 1,5% .

In the last twenty years there have been dramatic changes in consensual approaches to monetary policy. These changes, arising largely from continuing developments in macro and monetary economics, have led to four policy recommendations:

5.3 Monetary policy should choose explicitly between an inflation target or an exchange rate target

The rational expectations revolution and consequent changes in the mandates of central banks changed the way policy is formulated and communicated. Central bankers traditionally followed a policy of ambiguity: the conduct of monetary policy was only vaguely defined, targets, if any, were implicit and the public was left to guess what actions the central bank might take. This gave the monetary authority insurance against loss of credibility: as the precise goals were not publicly known, the central bank ran no risk of not meeting them. However this approach also made it difficult for the bank to affect expectations and increased the costs of anti-inflationary policies.

Over the last decade, many central banks have switched to explicit targets. In developed countries, the most popular are inflation targets. The central bank commits itself to maintain inflation in a narrow band: for example in Canada, between 1 and 3 percent per year. This target is explicitly announced. There are two reasons for making the goal explicit. First, public knowledge of the goal may have a beneficial effect on inflationary expectations, and so reduce the output and employment costs of disinflationary policy. Second, explicit announcement of the goal makes the central bank accountable. This is particularly important if the central bank has been given independence from the elected government.

5.4 The central bank should be independent from elected government

This change in thinking about the role of central banks was also prompted by the dynamic inconsistency literature, which began with a seminal paper by Finn Kydland and Edward Prescott (1977). They showed that a policy maker whose discretionary power prevents credible commitments has incentives to change its plans over time: it is "dynamically

inconsistent". This framework was applied to monetary policy in two influential papers by Robert Barro and David Gordon (1983) who showed that a central bank whose mandate is to minimize both inflation and unemployment will adopt policies that lead to excessive inflation and have little effect on unemployment.

Several solutions to the central bank's dynamic inconsistency problem have been proposed. The first involves delegation of monetary policy to someone who particularly dislikes inflation. Appointing as the head of the central bank a person who cares more about inflation and less about output than the general population leads to lower average inflation, but at the cost of an inferior response to macroeconomic disturbances. Another approach is to establish a reputation for the central bank as an inflation fighter.

Both approaches involve granting the central bank independence from elected representatives. For example New Zealand, in the early 1990s, gave its central bank independence and, moreover, made price stability the only goal of monetary policy. A second example was provided by the newly elected Labor government in Great Britain in 1997. Its first policy decision was to grant the Bank of England independence, abolishing the long-standing practice that the Governor reported to the Chancellor of the Exchequer.

These reforms curtail, or sometimes eliminate, the discretionary power of monetary policy. But while reducing the average rate of inflation, they restrict the central bank's ability to react to real shocks. However the evidence from developed market economies (e.g., Alberto Alesina, 1988) was that inflation rates were indeed lower in countries with more independent central banks, and that furthermore there were no significant differences in output behavior.

5.5 The goal of the central bank should be price and output stability, rather than long-term employment behavior

The goals of monetary policy were reformulated as a result of the rational expectations revolution and a careful examination of the inflation-unemployment trade-off. In the 1960s economists believed this trade-off to be permanent, that a permanent reduction in

unemployment could be achieved at the cost of a permanent increase in inflation. However, Milton Friedman (1968), Edmund Phelps (1970), Robert Lucas (1973) and others argued that the trade-off is only temporary, that while a permanent increase in the inflation rate does, initially, reduce unemployment, after some time it returns to a normal, or "natural" level. These theoretical developments undermined the belief that monetary policy could affect long-term levels of unemployment. The consensus now is that monetary policy in the long run should be aimed at keeping the inflation rate low, although in the short run it may be used to stabilize output and employment.

5.6   The exchange rate should either be fully flexible or credibly fixed

The last decade has seen a rash of currency crises world-wide. They were experienced in several Western European countries in 1992 - 93, Mexico in 1994, South-east Asia in 1997-98, the Czech Republic in 1997, Russia and Ukraine in 1998, Brazil in 1999, Turkey in 2001 and Argentina in 2002.   Recently, economists have begun to distinguish between credibly fixed exchange rate regimes (for example "currency board" systems anchored by large stocks of foreign exchange reserves), and so-called "pegged" rate regimes that are not credibly anchored. Some Western European currency-crisis countries chose to credibly fix within the European Monetary System (now the European Monetary Union), but Britain chose full flexibility. And in the late 1990s, flexible exchange rate regimes replaced the pegged policies in Southeast Asia, Russia and Brazil.

To some extent, pegged rate regimes have become more vulnerable as a result of huge increases in the volume of funds available to speculators in case of currency misalignment. Between 1977 and 1995 the ratio of foreign exchange trading to foreign trade increased from 3.5 to 58 (Felix, 1995). The volume of daily foreign exchange trading in 1995 was $1.2 trillion, or about $280 trillion a year, as compared with an annual volume of foreign trade in goods and services of about $4 trillion (Frankel, 1996). It is not surprising that maintaining pegged exchange rates has become much more difficult than in the past. It requires huge

amount of foreign exchange reserves that even rich countries (for example Britain in 1992) do not have.[4]

It is important, however, to understand that pegged exchange rates will be attacked by speculators only if fundamental circumstances – for example, high inflation, persistent current account deficits, unreliable capital inflows, or inadequate foreign exchange reserves – dictate devaluation. Moreover, governments are subject to pressure by interested parties – such as exporters and borrowers in foreign currency – and hence, typically, delay devaluation after "fundamentals" deteriorate. It is this delay by governments that provides speculators with the opportunity to bet on ultimate devaluation with the odds in their favor. And the very act of speculation increases the probably of success: that is, devaluation – and often a currency crisis – becomes "self-fulfilling". The Asian crisis, in particular, demonstrated the futility of pegged exchange rates when fundamental circumstances warrant devaluation.

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[4] A good example of a credibly fixed rate regime that survived speculative attack during the Asian crisis was Hong Kong's currency board system. The monetary authority of Hong Kong had at its disposal about $85 bn in own reserves, plus $125 bln. as reserves held by the Bank of China. A second example was China's fixed rate regime, which was also backed by very large reserves, not to mention shielded from speculation by currency controls.

6. The Economic Development of Turkey and Poland

The content of this chapter is referring to the tables about important economic indicators in Appendix I. and Appendix II. As for the main economic indicator I will be using gross domestic product (GDP), interest rate, government budget, government debt to GDP, GDP annual growth rate and GDP growth rate.

6.1 Gross Domestic Product

The gross domestic product (GDP) or gross domestic income (GDI) is one of the measures of national income and output for a given country's economy. GDP can be defined in three ways, all of which are conceptually identical. First, it is equal to the total expenditures for all final goods and services produced within the country in a stipulated period of time (usually a 365-day year). Second, it is equal to the sum of the value added at every stage of production (the intermediate stages) by all the industries within a country, plus taxes less subsidies on products, in the period. Third, it is equal to the sum of the income generated by production in the country in the period—that is, compensation of employees, taxes on production and imports less subsidies, and gross operating surplus (or profits).

6.2 Interest Rate

The interest rate term structure is the relation between the interest rate and the time to maturity of the debt for a given borrower in a given currency. For example, the current U.S. dollar interest rates paid on U.S. Treasury securities for various maturities are closely watched by many traders, and are commonly plotted on a graph such as the one on the right which is informally called "the yield curve." More formal mathematical descriptions of this relation are often called the term structure of interest rates. Yield curves are usually upward sloping asymptotically; the longer the maturity, the higher the yield, with diminishing marginal growth. There are two common explanations for this phenomenon. First, it may be that the market is anticipating a rise in the risk-free rate. If investors hold off investing now, they may receive a better rate in the future. Therefore, under the arbitrage pricing theory, investors who

are willing to lock their money in now need to be compensated for the anticipated rise in rates — thus the higher interest rate on long-term investments. However, interest rates can fall just as they can rise. Another explanation is that longer maturities entail greater risks for the investor (i.e. the lender). Risk premium should be paid, since with longer maturities, more catastrophic events might occur that impact the investment. This explanation depends on the notion that the economy faces more uncertainties in the distant future than in the near term, and the risk of future adverse events (such as default and higher short-term interest rates) is higher than the chance of future positive events (such as lower short-term interest rates). This effect is referred to as the liquidity spread. If the market expects more volatility in the future, even if interest rates are anticipated to decline, the increase in the risk premium can influence the spread and cause an increasing yield.

6.3 Government Budget

A government budget is a legal document that is often passed by the legislature, and approved by the chief executive-or president. For example, only certain types of revenue may be imposed and collected. Property tax is frequently the basis for municipal and county revenues, while sales tax and/or income tax are the basis for state revenues, and income tax and corporate tax are the basis for national revenues. The two basic elements of any budget are the revenues and expenses. In the case of the government, revenues are derived primarily from taxes. Government expenses include spending on current goods and services, which economists call government consumption; government investment expenditures such as infrastructure investment or research expenditure; and transfer payments like unemployment or retirement benefits. Budgets have an economic, political and technical basis. Unlike a pure economic budget, they are not entirely designed to allocate scarce resources for the best economic use. They also have a political basis wherein different interests push and pull in an attempt to obtain benefits and avoid burdens. The technical element is the forecast of the likely levels of revenues and expenses.

6.4   Government Debt to GDP

Government debt as a percent of GDP, also known as debt-to-GDP ratio, is the amount of national debt a country has in percentage of its Gross Domestic Product. Basically, Government debt is the money owed by the central government to its creditors. There are two types of government debt: net and gross. Gross debt is the accumulation of outstanding government debt which may be in the form of government bonds, credit default swaps, currency swaps, special drawing rights, loans, insurance and pensions. Net debt is the difference between gross debt and the financial assets that government holds. The higher the debt-to-GDP ratio, the less likely the country will pay its debt back, and more likely the country is to default on its debt obligations.

6.5   GDP Annual Growth Rate

The annual growth rate in Gross Domestic Product measures the increase in value of the goods and services produced by an economy over the period of a year. Therefore, unlike the commonly used quarterly GDP growth rate the annual GDP growth rate takes into account a full year of economic activity, thus avoiding the need to make any type of seasonal adjustment.

6.6   GDP Growth Rate

The Gross Domestic Product growth rate measures the increase in value of the goods and services produced by an economy. Economic growth is usually calculated in real terms or inflation-adjusted terms, in order to net out the effect of changes on the price of the goods and services produced. The Gross Domestic Product can be determined using three different approaches, which should give the same result. These different methods are the product technique, the income technique, and the expenditure technique. In sum, the product technique sums the outputs of every class of enterprise to arrive at the total. The expenditure technique works on the principle that every product must be bought by somebody, therefore the value of the total product must be equal to people's total expenditures in buying products and services.

The income technique works on the principle that the incomes of the productive factors must be equal to the value of their product, and determines GDP by finding the sum of all producers' incomes. The real GDP per capita of an economy is often used as an indicator of the average standard of living of individuals in that country, and economic growth is therefore often seen as indicating an increase in the average standard of living. However, there are some problems in using growth in GDP per capita to measure the general well-being of a country´s population. In fact, GDP was first developed by Simon Kuznets for a US Congress report in 1934, who immediately said not to use it as a measure for welfare. First, GDP per capita does not provide much information relevant to the distribution of income in a country. Second, GDP per capita does not take into account negative externalities such as pollution consequent to economic growth. Third, GDP per capita does not take into account positive externalities that may result from services such as education and health. Finally, GDP per capita excludes the value of all the activities that take place outside of the market place such as free leisure activities or less positive activities like organized crime.

6.7   Analysis of the Turkey central bank in the financial crisis

The overall macroeconomic policy has accommodated measures to mitigate the impact of the global economic crisis. The government's response to the economic downturn has combined monetary easing with foreign exchange liquidity and confidence-building actions in the financial sector, some employment measures, and temporary tax cuts.

The country's stand-by arrangement with the IMF was completed in May 2008. The economy managed to perform well with fiscal and monetary discipline continuing to be the main economic pillars establishing confidence among investors. In September 2009, the Medium Term Program was announced and this program outlined a fiscal plan to decrease budget deficits and control public debt to GDP ratio. The Medium Term Program has been updated in October 2010 to include the year 2013. This program reinforced the predictability of policies and enhanced confidence. Having seen one of the deepest economic contractions in Europe in 2009, industrial production and exports posted double-digit growth in 2010.

Coming out of recession in the final quarter of 2009, the Turkish economy displayed a remarkable comeback in 2010 as its real Gross Domestic Product (GDP) expanded by 11.8% in Q1, 10.2% in Q2 and 5.5% in Q3 annually.

With the final quarter of 2010 posting another strong performance, the Turkish economy recorded an 8.9% real economic growth for 2010 after contracting 4.7% in 2009. As a result, the economy has returned back to its pre-crisis output levels in 2010 as the overall nominal GDP is passed TL 1 trillion for the first time in history.

6.7.1   External Sector

Turkish exports contracted by nearly a third in 2009 compared to a year earlier, as Turkey's main export markets in Europe experienced a severe recession. Due to the contraction of world trade, the trade and current account deficits of the country had dropped to their lowest levels since 2004.

But due to the fast economic recovery in 2010, the current account and trade deficits soared in the country and became an important concern for policy makers. The January-December 2010 current account deficit hit USD 48.6 billion (bln) which is 247.1% higher compared to the same period of 2009. This is the highest level in the last 27 months only USD 603 million lower than the August 2008 peak of USD 49.2 bln, despite the oil price being more than 30% lower.

The trade balance continued to widen every month in 2010 and posted a deficit of USD 8.7 bln in December. With December print, annualized foreign trade deficit concluded 2010 at USD 71.5 bln, the highest level seen since 2008.

Exports increased by 18% annually to reach USD 11.9 bln in December 2010 which is the strongest performance since May 2010. On the other hand, imports hit USD 20.6 bln and topped the USD 20 bln mark for the second time in history as it surged 37% annually.

Cumulatively, annual 2010 exports recorded USD 114 bln, while imports came at 185.5 bln. The ratio of exports to imports dropped significantly from 72% in 2009 to 61% in

2010 which is a concern together with deterioration in the current account balance. The general balance of payments outlook confirms that domestic demand has a greater impact than exports. Within this context, current account deficit to GDP ratio shall stand close to 6.7%.

Turkey maintains its policy of the diversification of its trade partners. In 2010, the proportion of EU countries in Turkey's exports increased only slightly by 0.2 percentage points (pps) to 46.2%, thus EU is continuing to be the main trading partner for Turkey.

The exports are still behind their pre-crisis historic high level but are on a healthy recovery in 2010 as they hit USD 114 bln. The fastest growing industrial sectors have been the automotive sector, metal products, refined petroleum products, radio/TV/communications, and electrical machinery.

The rise in commodity prices and steady growth in domestic consumption demand is likely to fuel the current account deficit further in the coming years. Financing of current account deficit will not be a concern as major developed country central banks continue to pump liquidity into global markets.

6.7.2   Inflation Dynamics

CPI inflation decelerated to 6.4% on an annual basis in December 2010, down from 7.3% a month ago. CPI is currently at its lowest level since November 2009 and below the official 6.5% target set during 2010. Core CPI which excludes food, energy, alcohol, tobacco and gold reached 2.99% at the end of the year while PPI inflation came at 8.9%.

The favorable annual performance in inflation was possible by the downward correction in food prices, low commodity prices and significant fall in the services prices. The Central Bank is comfortable with the trend of inflation. The Bank expects the inflation rate to be between 4.5% and 7.3% with a midpoint of 5.9% for the end of 2011, while inflation is expected to further decline to 5.1% by the end of 2012.

6.7.3   Monetary Policy

The Central Bank of Turkey maintained price and currency stability by actively intervening in the markets in 2010. The Bank reduced the benchmark one-week repo rate by 50 basis points to 6.5% for the first time in more than a year in the final month of 2010. The Bank's motivation for the cuts was its concerns for current account deficit, credit loan growth, and hot money inflows.

The Central Bank made an aggressive sharp 400 percentage points cut in the overnight borrowing rate in November 2010 bringing the rate to a record low of 1.75% and also reduced the late liquidity borrowing rate to 0%. These moves were aimed to stimulate interbank lending and thus to address the excess liquidity, related to high capital inflows.

Central Bank of Turkey also asked the banking sector to improve its maturity structure in the liability side and take additional steps to increase maturity in Lira deposits. The Bank raised its lira reserve requirement ratio (RRR) to 10% from 8% for deposits of up to one month maturity. The RRR for deposits up to 6 months maturity has been set at 7%, 6% for up to one year maturity and 5% for one year and longer.

The Central Bank is likely to continue to take the necessary measures to prevent the adverse developments in food and energy prices and is expected to hold the rates steady till the last quarter of 2011 to contain the inflationary pressure and expectations.

6.7.4   Labor market

As a result of the strong economic recovery, the labor market outlook improved in the post-crisis year of 2010. According to the most recent data, the unemployment rate has dropped by 2.1 pps annually to 11% in November 2010. During the month the non-institutional working age population has increased by 855,000 and has reached 52.78 million. Number of employed persons increased by 1,113,000 compared to 2009 and has reached 22.854 million in period of November 2010. Agricultural employment increased by 354,000 while non-agricultural employment increased by 759,000 during this period.

The number of unemployed continued to drop throughout 2010 and has decreased by 459,000 in November compared to the same period of the previous year and has reached 2.8 million. During the global crisis years of 2008-09, the number of unemployed reached as high as 3.5 million, thus there is a huge improvement in employment figures. But the number of unemployed is still higher than its pre-crisis figure of 2.4 million and is likely to remain this way for several years to come.

6.8 The economic development of Turkey

6.8.1 Turkey Government Budget

Turkey reported a Government Budget deficit equal to 1.40 percent of the country's Gross Domestic Product in 2011. Historically, from 2001 until 2011, Turkey Government Budget averaged -6.8400 Percent of GDP reaching an all time high of 0.8000 Percent of GDP in December of 2006 and a record low of -33.0000 Percent of GDP in December of 2001. Government Budget is an itemized accounting of the payments received by government (taxes and other fees) and the payments made by government (purchases and transfer payments). A budget deficit occurs when an government spends more money than it takes in. The opposite of a budget deficit is a budget surplus. This page includes a chart with historical data for Turkey Government Budget.

Figure 17: Turkey government budget in 2002 – 2012 in % of the GDP
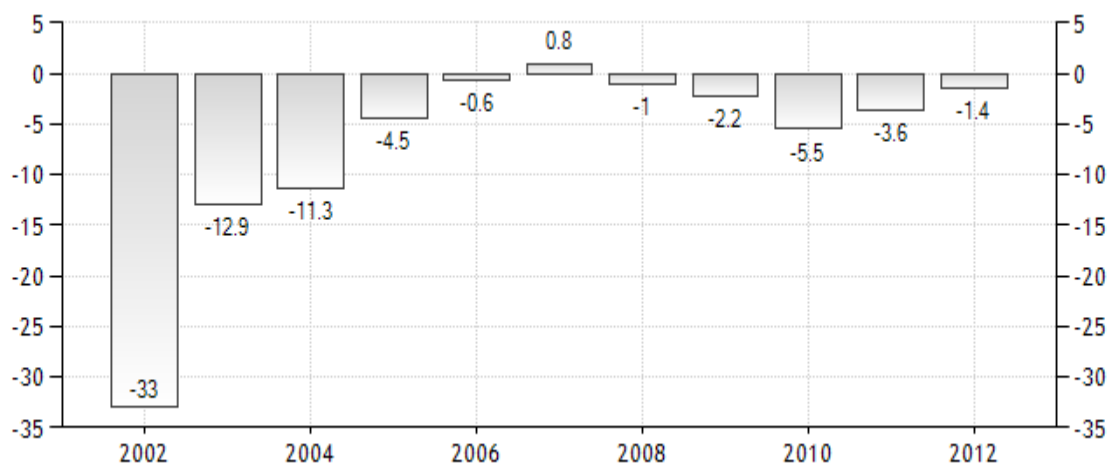
Source: The World Bank Group

6.8.2 Turkey Government Debt To GDP

Turkey recorded a Government Debt to GDP of 39.40 percent of the country's Gross Domestic Product in 2011. Historically, from 2000 until 2011, Turkey Government Debt To GDP averaged 53.1300 Percent reaching an all time high of 77.9000 Percent in December of 2001 and a record low of 39.4000 Percent in December of 2011. Generally, Government debt as a percent of GDP is used by investors to measure a country ability to make future payments on its debt, thus affecting the country borrowing costs and government bond yields. This page includes a chart with historical data for Turkey Government Debt To GDP.

Figure 18: Turkey government debt to GDP in 2001 – 2012 in % of the GDP

Source: The World Bank Group

6.8.3   Turkey GDP Annual Growth Rate

The Gross Domestic Product (GDP) in Turkey expanded 2.3 percent in the first quarter of 2012 over the same quarter of the previous year. Historically, from 1999 until 2011, Turkey GDP Annual Growth Rate averaged 4.1 Percent reaching an all time high of 12.6 Percent in March of 2010 and a record low of -14.7 Percent in March of 2009. The annual growth rate in Gross Domestic Product measures the increase in value of the goods and services produced by an economy over the period of a year. Therefore, unlike the commonly used quarterly GDP growth rate the annual GDP growth rate takes into account a full year of economic activity, thus avoiding the need to make any type of seasonal adjustment. This page includes a chart with historical data for Turkey GDP Annual Growth Rate.

Figure 19: Turkey GDP annual growth rate in 2000 – 2012 in %
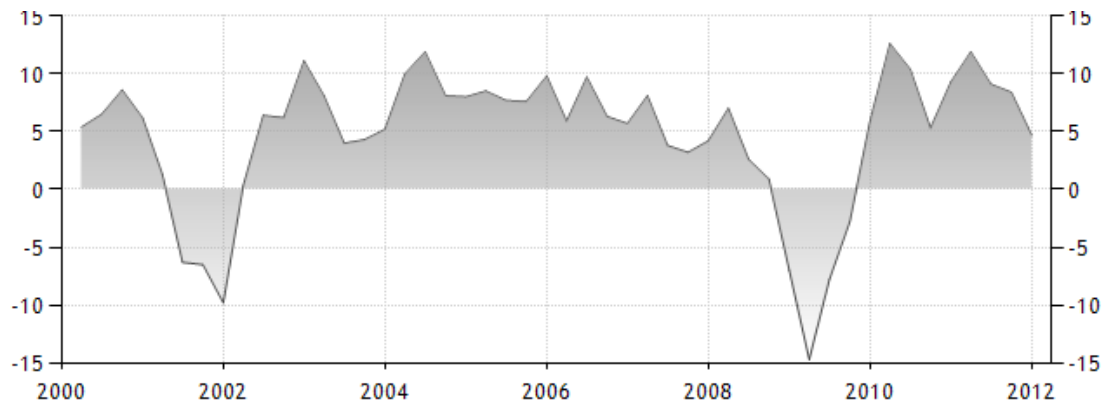
Source: The World Bank Group

6.8.4   Turkey GDP Growth Rate

The Gross Domestic Product (GDP) in Turkey expanded 0.20 percent in the first quarter of 2012 over the previous quarter. Historically, from 1998 until 2011, Turkey GDP Growth Rate averaged 1.0 Percent reaching an all time high of 6.7 Percent in June of 2009 and a record low of -7.6 Percent in March of 2009. The Gross Domestic Product (GDP) growth rate provides an aggregated measure of changes in value of the goods and services produced by an economy. Turkey is a rapidly developing country and the largest national economy in Central and Eastern Europe. Turkey's dynamic economy is a complex mix of modern industry and commerce along with a traditional agriculture sector that still accounts for about 30% of employment. It has a strong and rapidly growing private sector, yet the state remains a major participant in basic industry, banking, transport, and communication. This page includes a chart with historical data for Turkey GDP Growth Rate.

Figure 20: Turkey GDP growth rate in 2000 - 2012
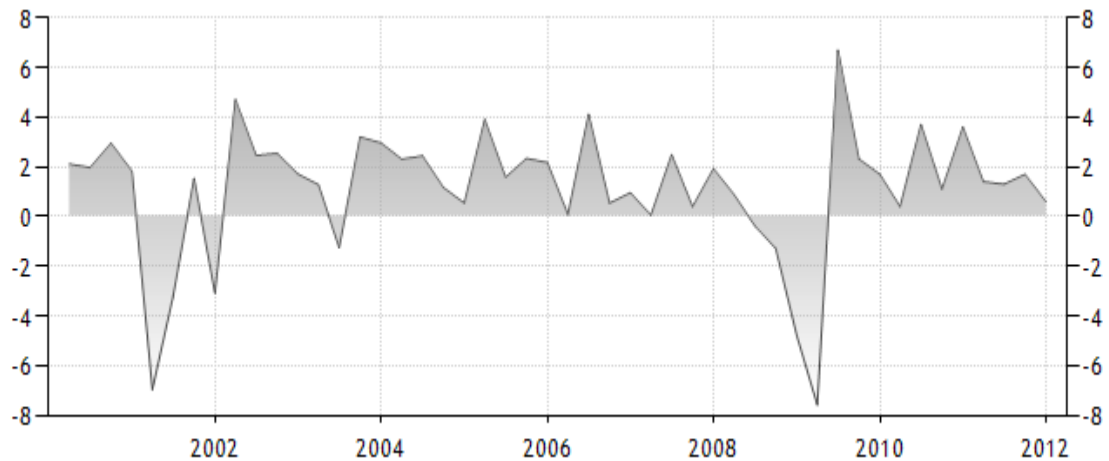
Source: The World Bank Group

6.8.5 Turkey GDP

The Gross Domestic Product (GDP) in Turkey was worth 735.26 billion US dollars in 2010, according to a report published by the World Bank. The GDP value of Turkey is roughly equivalent to 1.19 percent of the world economy. Historically, from 1968 until 2010, Turkey GDP averaged 191.6700 billion USD reaching an all time high of 735.2600 billion USD in December of 2010 and a record low of 15.7500 billion USD in December of 1968. The gross domestic product (GDP) measures of national income and output for a given country's economy. The gross domestic product (GDP) is equal to the total expenditures for all final goods and services produced within the country in a stipulated period of time. This page includes a chart with historical data for Turkey GDP.

Figure 21: Turkey GDP in 2001 – 2011 in bln. USD

Source: The World Bank Group

6.9 The economic development of Poland

The Economy of Poland is a high income economy (World bank, 2011) and is the sixth largest in the EU and one of the fastest growing economies in Europe, with a yearly growth rate of over 3.0% before the late-2000s recession. (Forbes, 2012) It is the only member country of the European Union to have avoided a decline in GDP, meaning that in 2009 Poland has created the most GDP growth in the EU. (Eurostat, 2012) As of December 2009 the Polish economy had not entered recession nor contracted. According to the Central Statistical Office of Poland, In 2010 the Polish economic growth rate was 3.9%, which was one of the best results in Europe.

A nation like Poland has a special role to play in the global economic development," said Anstey. Poland's experience shows how sound policies and strong political leadership can deliver success. This experience "the 'Polish know how" is an important ingredient for others to learn from and to be successful, and Poland can provide it.

6.9.1   Poland Government Budget

Poland recorded a Government Budget deficit equal to 5 percent of the country's Gross Domestic Product in 2011, which is same as in 2003. Historically, from 1995 until 2011, Poland Government Budget averaged -4.7 Percent of GDP reaching an all time high of -1.9 Percent of GDP in December of 2007 and a record low of -7.9 Percent of GDP in December of 2010. Government Budget is an itemized accounting of the payments received by government (taxes and other fees) and the payments made by government (purchases and transfer payments). As it known a budget deficit occurs when government spends more money than it takes in. The opposite of a budget deficit is a budget surplus, but Poland has not reached in studied era. The following Figure 22 shows historical data for Poland Government Budget in 2002 - 2012.

Figure 22: Poland government budget in 2002 – 2012 in % of the GDP
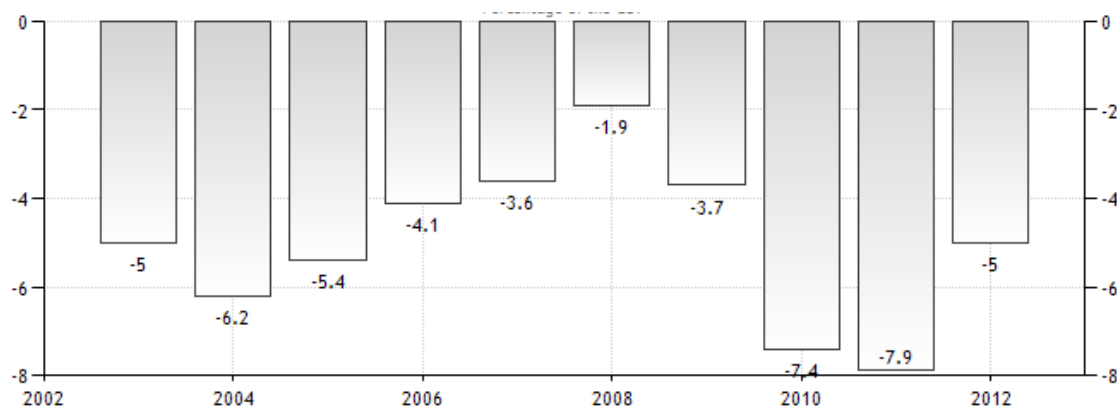
Source: The World Bank Group

6.9.2 Poland Government Debt to GDP

As it can be seen Poland Government Debt to GDP is on the rise since 2008. Poland recorded a Government Debt to GDP of 56.40 percent of the country's Gross Domestic Product in 2011. Historically, from 1995 until 2011, Poland Government Debt To GDP averaged 45.4 Percent reaching an all time high of 56.4 Percent in December of 2011 and a record low of 36.8 Percent in December of 2000. Generally, Government debt as a percent of GDP is used by investors to measure a country ability to make future payments on its debt, thus affecting the country borrowing costs and government bond yields. The following Figure 23 shows historical data for Poland Government Debt to GDP in 2002 - 2012.

Figure 23: Poland government debt to GDP in 2003 – 2012 in % of the GDP

Source: The World Bank Group

6.9.3 Poland GDP Annual Growth Rate

Poland GDP Annual Growth Rate fell in 2002 and in 2009 nearly to the zero, but has never been in negative numbers. The Gross Domestic Product (GDP) in Poland expanded 1.40 percent in the third quarter of 2012 over the same quarter of the previous year. Historically,

from 1995 until 2012, Poland GDP Annual Growth Rate averaged 4.4 Percent reaching an all time high of 8.1 Percent in December of 1996 and a record low of 0.3 Percent in December of 2001. In Poland, the annual growth rate in GDP measures the change in the value of the goods and services produced by the country economy during the period of a year. . The following Figure 24 shows historical data for Poland GDP Annual Growth Rate in 2000 - 2012.

Figure 24: Poland GDP annual growth rate in 2000 – 2012 in %
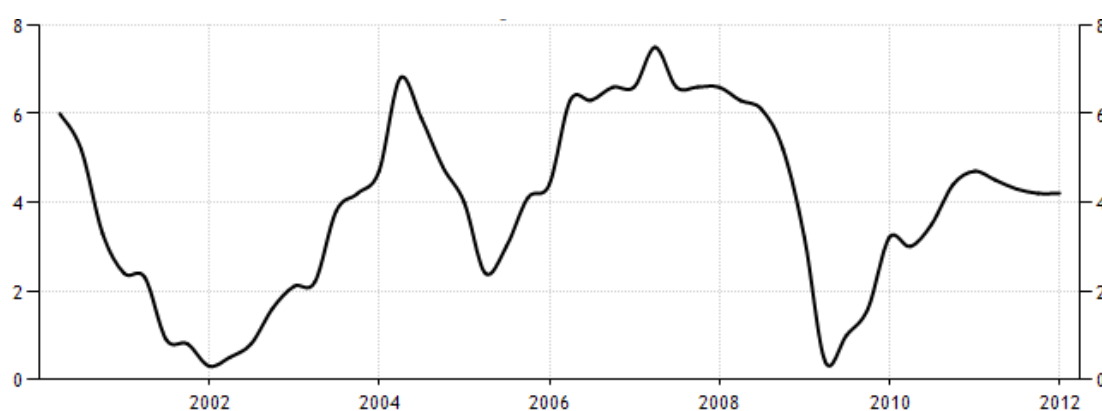
Source: The World Bank Group

6.9.4   Poland GDP Growth Rate

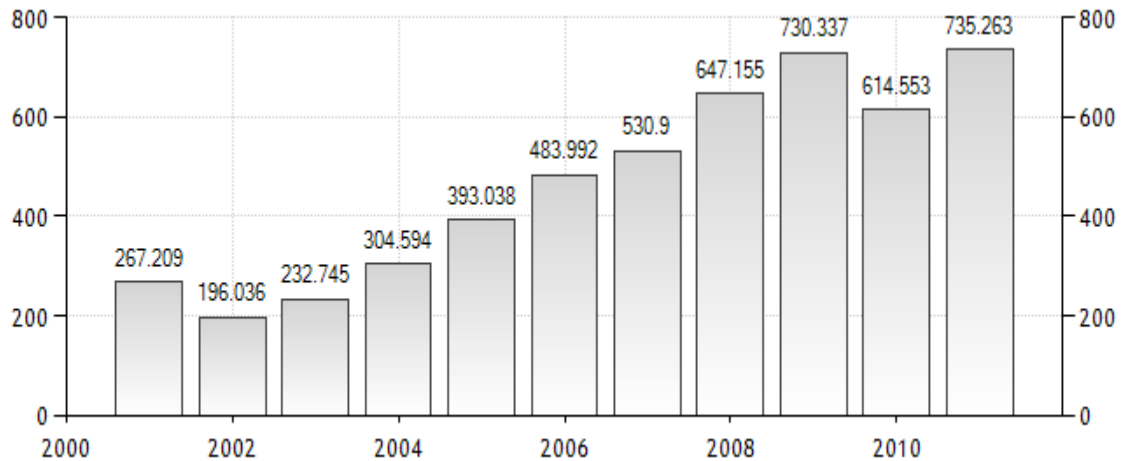The development of Poland GDP Growth Rate was really low in 2002 and in 2009, but has never been in negative numbers. The Gross Domestic Product (GDP) in Poland expanded 0.40 percent in the third quarter of 2012 over the previous quarter. Historically, from 1995 until 2012, Poland GDP Growth Rate averaged 1.1 Percent reaching an all time high of 6.4 Percent in March of 1997 and a record low of -3.2 Percent in December of 1996. Poland has pursued a policy of economic liberalization since 1990 and today stands out as a success story among transition economies. In 2008, GDP grew an estimated 4.8%, based on rising private consumption, a jump in corporate investment, and European Union funds inflows. Since 2004,

EU membership and access to EU structural funds have provided a major boost to the economy. The following Figure 25 shows historical data for Poland GDP Growth Rate in 2000 - 2012.

Figure 25: Poland GDP growth rate in 2000 - 2012
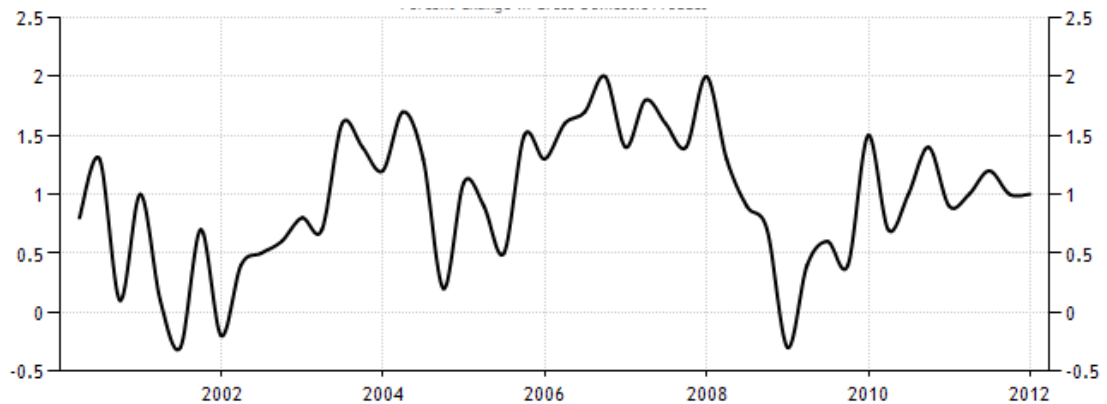
Source: The World Bank Group

6.9.5 Poland GDP

The Gross Domestic Product (GDP) in Poland has grown almost three times from 2001 to 2012 and is constantly rising with exception of 2010, when it was influenced by the economic crisis. GDP in Poland was worth 514.50 billion US dollars in 2011. The GDP value of Poland represents 0.83 percent of the world economy. Historically, from 1985 until 2011, Poland GDP averaged 207.4 USD Billion reaching an all time high of 529.4 USD Billion in December of 2008 and a record low of 59.0 USD Billion in December of 1990. The gross domestic product (GDP) measures of national income and output for a given country's economy. The gross domestic product (GDP) is equal to the total expenditures for all final goods and services produced within the country in a stipulated period of time. The following Figure 26 shows historical data for Poland GDP Growth Rate in 2001 - 2011.

Figure 26: Poland GDP in 2001 – 2011 in bln. USD
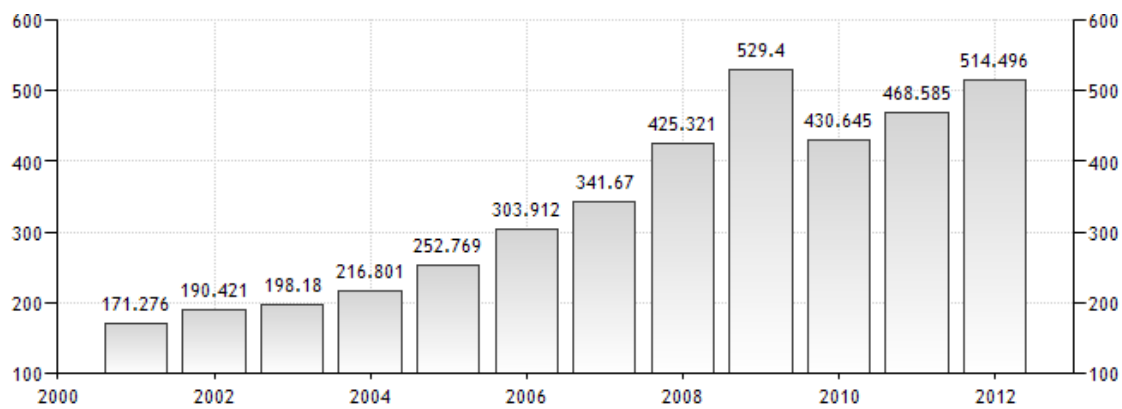
Source: The World Bank Group

7. The Final Evaluation and Suggestions

7.1 Research findings

Based on the above, I can make the following conclusions:

- Securities of emerging markets to implement measures to alleviate the liquidity shortage is mainly due to foreign currency transactions, providing domestic liquidity and reduce interest rate policy. Rarely used measures of credit and quantitative easing. About 30% of these banks have used foreign exchange swaps among themselves. Securities of emerging markets to a greater extent relied on direct instruments (eg, reduction in reserve requirements).

- Central Bank of the developed countries to implement measures to mitigate the liquidity deficit is mainly due to the provision of domestic liquidity by increasing the number of counterparts, and prolonging the selection of financing, as well as by reducing the interest rate policy. The rapid contraction of the economies required the adoption of measures to reduce the requirements for credit and quantitative easing. Bank of England - the only securities, which pursued a policy of bank reserves.

- In developed countries, provided the liquidity of the securities, but none of the central bank of emerging markets did not do it.

  - U.S. Federal Reserve to focus on non-bank credit markets and transactions involving securities of the private sector.

  - The Bank of England is mainly conducted purchase of government securities;

  - ECB's focus on the liquidity of the banking system;

  - The Bank of Japan has made a serious effort to improve the conditions of financing the real economy, carrying out transactions with promissory notes and corporate bonds.

- Central Bank and developed countries and emerging markets used to measure the allocation of foreign currency liquidity. They also participated in the agreements on the allocation of the liquidity of the Central Bank - the issuers of reserve currencies.

- The use of unconventional measures the Central Bank of developed countries and emerging markets exacerbated the problem of total (public and private) debt servicing which could make significant changes in the channels of monetary policy tools and TMM in the near future.

7.2   Suggestions for monetary policy in Turkey

Before I make suggestions, which should make monetary policy in Turkey more effective, let us do a short summary of how economy in turkey was developing in past decade. After 1998, Turkey's success at stabilizing inflation was somewhat more rapid than Poland's. However for a variety of reasons, output growth (until 2001) was much slower, as was the country's ability to attract foreign direct and portfolio investment. Strong foreign portfolio investment was of great help to Poland's fostering of its Treasury bill market. However the foreign market for Turkey's Treasury bills dried up after the crises of 1998-1999, which culminated in involuntary lengthening of maturities for some holders. The continued absence of a non-bank market for Treasury bills, either foreign or domestic, remains an impediment to monetary control in Turkey. But the more serious consequence is that credit to the private sector is crowded out. As long as Turkish banks are able to survive substantially on income from Treasury bills, their incentives to seek private borrowers will be blunted.

So I can clearly say that Turkey would do well to consider the long-term sequence of monetary policy goals that has been pursued by Poland with some success, albeit with short-term deviations and setbacks. It is because initial stabilization was pursued by targeting an exchange rate crawl and then the rate itself within ever-widening bands, much as Turkey has done since the mid-1990s. This was gradually replaced by an anti-inflationary policy that first targeted the broad money supply, then the monetary base and now inflation directly, with full flexibility given to the exchange rate. Such a sequence of targets is appropriate for transition

economies: exchange rate targeting to bring inflation down to single-digit levels, then monetary targeting as control instruments such as open market operations become available, and finally inflation targeting as data and forecasting become more sophisticated. See Krzak and Ettls (1999) on the pros and cons of inflation targeting for Central European countries.

According to my research, there is a great advantage of the latter, so that it can be combined with a fully flexible exchange rate, which provides an important shock absorber against volatile capital flows. Of course Turkey has not yet reached the stage of transition when capital flows are large enough in volume that overshooting of inflows and outflows poses a problem, but it probably will soon.

Finally, the analysis is showing that Turkey should re-consider its current exchange rate policy, which is, of course, simply one aspect of its monetary policy. The present policy of limiting appreciation in order to stimulate exports, encourage capital inflows and accumulate foreign exchange reserves is somewhat reminiscent of Poland's policy of "over-devaluation" in the early 1990s. A necessary by-product of such an exchange rate policy is rapid monetary growth, roughly at the rate that reserves accumulate. In 2001–2002 rapid monetary growth in Turkey was accompanied by high real growth, but to the extent that monetary growth exceeds real growth, inflation is inevitable. Sterilization of monetary growth would prove even more expensive in Turkey than it did in Poland in 1995, since the non-bank market for government securities is so thin.

In my opinion, the most important suggestion for Turkey is that the central bank of Turkey would do well to retreat from its recent policy of intervention to limit appreciation of the hryvnia, and move toward a fully flexible rate with inflation targeting. In the longer run, once transition-related shocks to the current and capital accounts become less problematic, turkey, like Poland, will probably want to harden its exchange rate against the euro, especially once EU and membership become options. A fix against the ruble would not be wise, for reasons discussed in Section.

7.3   Suggestions and their implications for monetary policy

At the end of my analysis I can say that Poland and Turkey have stabilized inflation at moderate levels and, except for the recent recession in the Turkey, succeeded in generating sustained growth. Although different initial conditions and the different starting times of stabilization programs resulted in somewhat different paths, the trajectories of their growth and inflation have converged.

According to my research, whether the two countries can continue with the process of disinflation and achieve West European rates of CPI growth during the next few years depends on three factors. The first and most important of these is whether they can continue to support monetary policy with the appropriate fiscal policy.

The second and the third factor need to be more explained. The instances in which fiscal policy was tightened in these two countries Poland in 1993, the Turkey in 2005 amply demons rate the effectiveness of fiscal policy in influencing both the domestic economy and exports and imports. Also evident in all three countries is a tendency for passive fiscal policy to lead to gradually larger fiscal deficits. The second factor influencing the course of inflation in the region is the international environment. All three countries benefited greatly from the fall in the prices of imports, particularly those of fuels and raw materials. Agricultural prices have also been stable due to good harvests and cheap imports from the EU. The third factor influencing the course of inflation in the Poland is whether a new approach to monetary policy based on inflation targeting will be effective. The belief of both the NBP is that, if inflation targeting can be made credible, then much of the persistence of past inflation on inflationary expectations will be reduced as central bank credibility is strengthened and as inflationary expectations become more forward looking rather than backward looking.

But as I was explaining in previous chapters of the dissertation neither the NBP have made much of an effort to indicate precisely what they mean by inflation targeting. Such lack of clarity may provide the banks with a measure of flexibility in setting goals and objective s, but it does little to make the process of setting monetary policy more credible or t transparent.

Thus, the lack of clarity may defeat a primary purpose of having an inflation target that is, helping people form more accurate expectations of inflation.

It can be clearly seen from the analysis that inflation targeting has important advantages over other forms of monetary policy. First, it provides a nominal anchor, the price level, for monetary policy. Second, inflation targeting implies a transparent policy target, one that both the public and the government can understand and observe. This leads to the third advantage, namely that the central bank's accountability is increased, and to the extent that the bank meets its goals, its credibility is increased as well.

Masson et al. (1997), however, argue that there are important pre requisites that must be met if inflation targeting is to be lead to low and stable inflation.

The first of these is central bank independence. Dejure, the operational independence of the NBP is on a par with that of the industrialized countries that use inflation targeting. This is less so, however, in the case of goals to be pursued. In Poland, the Bank is concerned not only about the inflation target, but also the nominal exchange rate This is due largely to considerations surrounding Poland 's prospective entry into the EU.

A second pre requisite is that there beneficial dominance, meaning that the central bank's policy not be dictated by the need to finance the fiscal deficit of the government. Again, de jure, both countries have safeguards against the central bank being forced to finance the government. Nevertheless, in reality and especially if we consider the banking system as a whole this becomes a troublesome issue. In Poland the seignior age to GDP ratio has been relatively high by international standards.

As I mentioned above, the commercial banking sector in both countries has tended to have a healthy appetite for government debt at the expense of lending to the business sector r. Thus the de jure ability of the central banks to avoid having to finance the government may be subverted by the commercial banks' evident willingness to do so.

So I would suggest to these central banks, which have full owing inflation targeting policy that they should avoid other nominal targets. In the case of Poland, the intervention

bands for the zloty are quite wide, but, as mentioned above, the zloty's exchange rate continues to be pegged to the U.S. dollar and to the Euro. Poland the inflation during mid-1999 was at or above the upper limit of the NBP's forecast. These potential failures to achieve inflation goals do not mean that inflation targeting cannot be a workable policy regime in the longer term. Nevertheless, there is a danger that either undershooting or overshooting inflation targets may convince the population that their central banks have little impact on the rate of inflation, thus undermining policy credibility.

Before I evaluate the hypothesis of the dissertation I will summarize the influence of monetary policy on the development of economy in Turkey and Poland. Both nations have made considerable progress in stabilizing and liberalizing their economies. Monetary policy has made significant contribution to stabilization and there has been are mark able development in these countries' financial institutions and markets. Nevertheless, the relative newness and fragility of these markets and institutions is of concern because of the heavy burden placed on monetary authorities battling to reduce inflation. So the conclusion and final suggestion for both economics is that it will be important to continue to strengthen the capital market in these countries and to provide more active fiscal policy support for monetary policy.

7.4   The evaluation of the hypothesis

At the beginning of the analysis of the collected knowledge was defined methodology of dissertation and stated main hypothesis of the dissertation and associated targets. This chapter will provide evaluation of the main hypothesis based on the accomplished research.

The main theoretical contribution of the dissertation lies in comprehensive description and comparison of the monetary policy between Turkey and Poland. The result of the comparative analysis was to determine the differences in the monetary policy of the central bank in Turkey and central bank in Poland and its influence on the economic level of both countries.

In the analytical part of the dissertation, based on the above findings, I have found that Turkey is processing the long-term sequence of monetary policy goals with success and that is

helping their economy to rise in spite of the economic crisis. Their present policy of limiting appreciation in order to stimulate exports, encourage capital inflows and accumulate foreign exchange reserves has negative effects on monetary growth and on the accumulating reserves, but they are on a good way to retreat from this policy of intervention to limit appreciation of the hryvnia, and move toward a fully flexible rate with inflation targeting.

Now I can say that I have managed to confirm the initial hypothesis that there is still a big difference between economic level of Poland and economic level of Turkey, which is also influenced by different monetary policies in both nations. But this difference is diminishing thanks to the effective monetary policy of Central Bank of the Turkey. Also both countries have overcome the worst shock from the economic crisis and are again on the rise.

I consider as the benefit of my dissertation not only the attempt to summarize theoretical knowledge about monetary policy and transmission mechanism of Central Bank of the Turkey and of National Bank of Poland, but also the attempt to draw conclusions in the analytical part of the dissertation relating to the comparison of economic development between Turkey and Poland. I consider as an important contribution of the work final suggestions to make monetary policy of Turkey more effective.

Conclusion

The dissertation has provided the evidences on the recent and noticeable increase in the level of MP in whole world, with particular attention to Turkey and Poland. The main objective of the dissertation was to discuss the costs associated with the excessive build-up of reserves, in particular in developing countries in Libya and the rationality behind such accumulation. In the last three chapters, the main aim was to bring in the dissertation the main discussion on the causes and motivation of countries around the world and, in particular, in Turkey and Poland, to hoard excessive amounts of MP. Precautionary and mercantilist purposes were pointed as the main roots of such accumulation. There was also the conviction that African countries are not just building up such amount of monetary policy for mercantilist motive, but there are also some personal interests from the members of the government and the central bank. This means that central banks, among other factors, have in mind that by attracting foreign currency, it will be better able to control the exchange rate, letting it unwavering so the foreign investors might be expected to invest more in the country.

However, as it is known by the macroeconomic theory, foreign currency inflows alter the monetary base, and if the money supply increases, the expected value of the local currency will also increase. This will lead to higher inflation rates which will cause a decrease in the competitiveness of domestic exports. Therefore, the balance of payment might become deficient.

As a consequence, it is desirable that the monetary authorities employ the sterilization policy which is able to offset the negative impact of the foreign reserves on the monetary base and on the macroeconomic variables. It works mostly through the open market operations and consists in selling government bonds in order to equilibrate the balance sheet of the central bank. However, as the evidences suggested along the dissertation, the sterilization process becomes doubtful when Assets market in some economies is underdeveloped.

Then, the dissertation went through the main costs of this build-up, particularly for low and medium African economies, which are mainly characterized by poor financial and asset

markets and underdeveloped institutional organizations. In this sense, monetary costs such as costs with sterilization and CB's balance sheet were analyzed.

One of the main costs discussed in this dissertation was the opportunity costs which basically assume that excessive reserves should be used to finance alternative public projects which would lead to higher returns and increases in the GDP level.

As a consequence, excessive accumulation of MP might bear significant costs for the economy. So, to sum-up, based on this research, African countries and in general, countries in developing stage should pay more attention to the future negative implication of such desperate accumulation of foreign reserves. International institutions, World Bank, International Monetary Fund, as responsible to cover the current account deficit in developing countries, should pay more attention to the mechanisms through which these foreign currencies are drained.

Abstrakt

Rozvojové tržní ekonomiky se v dnešní době staly jednou z nejdynamičtějších a ekonomicky nejvýznamnějších skupin ve světové ekonomice. S růstem těchto ekonomií a jejich zvyšující se integrací do mezinárodního obchodu a financí tyto ekonomiky čelí stále složitějšímu souboru strategických výzev. Vzhledem k jejich důležité roli ve světové ekonomice pokud jde o populaci a objem ekonomiky jako takový, účinné řešení jejich problémů má významné ekonomické, sociální a politické důsledky, dokonce i za hranicemi svých států.

Měnová politika je obvykle první linií obrany proti řadě interních i externích šoků, kterým jsou nyní tyto ekonomiky vystaveny. Správná akce je proto důležitá. Nicméně, rozvojové tržní ekonomiky se potýkají s řadou obtížných výzev při navrhování struktury měnové politiky, která by fungovala dobře, pokud jde o podporu měnové finanční stability.

Navzdory jejich rostoucí ekonomické síle mají mnohé rozvojové tržní ekonomiky stále poměrně málo rozvinuté finanční trhy a instituce, příjmy na jednoho obyvatele, které stále velmi výrazně zaostávají za příjmy vyspělých průmyslových ekonomik, a významný podíl jejich obyvatel stále žije v chudobě. To klade řadu omezení na účinnou formulaci a provádění makroekonomické politiky.

Tato disertační práce poskytuje důkazy o nedávném znatelném zvýšení úrovně MP v celém světě, s obzvláštním důrazem na Turecko a Polsko. Hlavním cílem disertační práce bylo prodiskutovat náklady spojené s nadměrným nárůstem rezerv, zejména v rozvojových zemích jako na příklad Libye, a účelnosti takové akumulace. V posledních třech kapitolách je hlavním cílem disertační práce předložit hlavní diskusi o příčinách a motivacích zemí po celém světě, zejména v Turecku a Polsku, pro hromadění nadměrného množství MP.

Bezpečnostní a obchodní účely byly udávány jako hlavní příčiny takové akumulace. Existovalo také přesvědčení, že africké země nebudují takové množství měnové politiky jenom z na základě obchodní motivace, ale že také existují určité osobní zájmy členů vlády a centrální banky. To znamená, že centrální banky, mimo jiné, mají v úmyslu přilákáním

zahraničních měn možnost lépe ovládat směnný kurz, aby zůstal pevným, a dalo se pak očekávat, že zahraniční investoři budou v zemi více investovat.

Nicméně, jak je známo z makroekonomické teorie, příliv cizí měny mění měnovou bázi, a pokud se zvyšuje množství peněz v oběhu, předpokládaná hodnota místní měny se také zvýší. Toto povede k vyšší inflaci, která způsobí pokles konkurenceschopnosti tuzemského vývozu. Následkem toho by platební bilance mohla být nedostatečná.

V důsledku toho je žádoucí, aby měnové orgány používaly sterilizační politiku, která je schopna vyrovnat negativní dopad devizových rezerv Na měnovou bázi a na makroekonomické veličiny. Působí většinou přes operace Na volném trhu, a spočívá v prodeji státních dluhopisů, aby se vyrovnala balance centrální banky. Nicméně, jak naznačují důkazy v této disertační práci, sterilizační proces se stává nejistým, když aktiva na trhu v některých ekonomikách jsou málo vyvinutá.

Disertační práce poté analyzuje hlavní náklady tohoto vzrůstu, a to zejména pro malé a střední africké ekonomiky, které jsou charakterizovány hlavně špatnými, nízkými finančními a majetkovými trhy a zaostalými institucionálními organizacemi. V tomto smyslu byly analyzovány finanční náklady, jako jsou například náklady související se sterilizací a bilancí centrální banky.

Jedním z hlavních nákladů diskutovaných v této disertační práci byly náklady na příležitosti, které v podstatě předpokládají, že nadměrné rezervy by měly být použity na financování alternativních veřejných projektů, které by vedly k vyšším výnosům a zvýšení úrovně HDP.

V důsledku toho může nadměrné hromadění MP způsobit značné náklady pro ekonomiku. V souhrnu, na základě tohoto výzkumu, africké země a obecně země v rozvojovém stadiu, by měly věnovat větší pozornost budoucím negativním důsledkům takového zoufalého hromadění devizových rezerv. Mezinárodní instituce, Světová Banka, Mezinárodní měnový fond, které jsou odpovědné za momentální propad brozvojových zemích, by měly věnovat více pozornosti mechanismům, kterými jsou tyto cizí měny odčerpávány.

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Appendixes

Appendix I. - Basic Macroeconomic Indicators of Turkey in 2006 - 2010

Key Indicators: Turkey 2006-2010	2006	2007	2008	2009	2010
Population (mid-year; million [mln])	69.4	70.2	71.1	72.1	73.0
Average exchange rate (Turkish Lira,TL/ USD)	1.43	1.30	1.29	1.55	1.50
Inflation rate (CPI average; %)	9.6	8.8	10.4	6.3	8.6
GDP at current prices (local cur. billion,bln)	758	843	951	953	1,105
GDP at current prices (USD bln)	526	649	742	617	736
GDP / capita (in cur. prices; USD)	7,583	9,234	10,440	8,578	10,079
Real GDP growth (%)	6.9	4.7	0.7	-4.7	8.9
Unemployment rate (ILO definition; eop; %)	10.4	10.4	11.1	14.2	12.1
Industrial output growth (%)	8.3	5.8	0.3	-6.9	12.9
Agricultural output growth (%)	1.4	-6.7	4.3	3.6	1.6
Services output growth (%)	7.3	6.0	0.4	-4.7	7.8
Direct foreign investment (USD bln)	20.2	22.0	19.5	8.4	9.1
Central Gov. Budget balance /GDP (%)	-0.6	-1.6	-1.8	-5.5	-3.7
Gross government debt (USD bln)	260.3	305.2	269.9	309.2	321.3
Gross government debt / GDP (%)	48.2	42.2	42.9	48.9	45.0
EU Defined General Government Nominal Debt/GDP (%)	46.1	39.4	39.5	45.5	42.3
Export (fob, USD bln)	85.5	107.3	132.0	102.1	114
Import (fob, USD bln)	139.6	170.0	201.9	140.9	185.5
Trade balance (exp. fob. - imp.fob.; USD bln)	-54.0	-62.8	-69.9	-38.8	-71.5
Current account balance (USD bln)	-32.2	-38.4	-41.9	-14.0	-48.5
Current account / GDP (%)	-6.1	-5.9	-5.7	-2.3	-6.6
Foreign reserves (excl. gold; eop; USD bln)	58.3	71.6	69.7	70.7	80.7

Sources:

(1) Central Bank of Turkey

(2) Turkish Statistical Institute

Appendix II. - Basic Macroeconomic Indicators of Poland in 2003 - 2010

	Unit	2003	2004	2005	2006	2007	2008	2009	2010
Production and income									
Gross domestic product (GDP)	Bln USD curr. PPPs	457.8	496.9	526.1	574.6	638.9	688.5	722.0	754.1
GDP per capita	USD current PPPs	11 985	13 015	13 786	15 067	16 762	18 062	18 925	19 747
Gross national income (GNI) per capita	USD current PPPs	11 869	12 655	13 523	14 685	16 161	17 699	18 256	..
Household disposable income	Annual growth %	1.2	3.4	1.5	4.4	4.7	3.5	4.8	..
Economic growth									
Real GDP growth	Annual growth %	3.9	5.3	3.6	6.2	6.8	5.1	1.7	3.8
Net saving rate in household disposable income	%	7.7	7.0	7.3	7.5	6.1	0.8	7.8	..
Gross fixed capital formation	% of GDP	-0.1	6.4	6.5	14.9	17.6	9.6	-1.1	-2.0
Economic structure									
Real value added: agriculture, forestry, fishing	Annual growth %	2.7	6.8	-1.0	-2.2	-3.5	-1.3	10.5	-1.4
Real value added: industry	Annual growth %	7.8	10.5	3.5	10.0	10.1	6.8	-0.3	9.1
Real value added: services	Annual growth %	4.1	0.9	1.7	2.1	2.7	3.7	2.8	1.1
Government deficits and debt									
Government deficit	% of GDP	-6.2	-5.4	-4.1	-3.6	-1.9	-3.7	-7.4	-7.9
General government debt	% of GDP	55.3	54.8	54.7	55.2	51.7	54.5	58.4	62.4
General government revenues	% of GDP	38.4	37.3	39.4	40.3	40.3	39.6	37.2	37.9

General government expenditures	% of GDP	44.6	42.7	43.5	43.9	42.2	43.2	44.6	45.8
Expenditure									
Public expenditure on health	% of GDP	4.4	4.3	4.3	4.3	4.6	5.1	5.3	..
Private expenditure on health	% of GDP	1.9	1.9	1.9	1.9	1.9	1.9	2.0	..
Public social expenditure	% of GDP	22.3	21.4	21.0	20.8	19.8	..	..	..
Private social expenditure	% of GDP	0.0	0.0	0.0	0.0	0.0	..	..	..
Public pension expenditure	% of GDP	11.9	11.7	11.4	11.5	10.6	..	..	..
Private pension expenditure	% of GDP	..	..	0.0	0.0	0.0	0.0	0.0	..
Net official development assistance (Aid)	% of GNI	..	..	..	..	..	..	..	..
Taxes									
Total tax revenue	% of GDP	32.6	31.7	33.0	34.0	34.8	34.3	..	..
Taxes on income and profits	% of GDP	6.0	5.9	6.4	7.0	8.0	8.1	..	..
Taxes on goods and services	% of GDP	12.2	11.9	12.7	13.3	13.0	13.0	..	..
Taxes on the average worker	% of labour cost	38.2	38.4	38.7	39.0	38.2	34.7	34.2	34.3
Trade									
Imports of goods and services	% of GDP	36.0	39.8	37.8	42.2	43.6	43.9	39.4	42.3
Exports of goods and services	% of GDP	33.3	37.5	37.1	40.4	40.8	39.9	39.5	41.5
Goods trade balance: exports minus imports of goods	Bln USD	-14.4	-14.4	-12.2	-16.1	-25.4	-38.6	-10.5	..
Imports of goods	Bln USD	68.0	88.2	101.5	125.6	164.2	210.5	147.1	..
Exports of goods	Bln USD	53.5	73.8	89.4	109.6	138.8	171.9	136.6	..
Service trade balance: exports	Bln USD	0.2	0.1	0.7	0.7	4.8	5.0	4.8	3.5

minus imports of services									
Imports of services	Bln USD	10.9	13.4	15.5	19.9	24.2	30.5	24.2	29.0
Exports of services	Bln USD	11.2	13.5	16.3	20.6	28.9	35.5	29.0	32.5
Current account balance of payments	% of GDP	-2.5	-4.0	-1.2	-2.7	-4.7	-4.8	-2.2	-3.4
Foreign direct investment (FDI)									
Outward FDI stocks	Mln USD	..	..	..	..	21 318	24 092	29 304	39 029
Inward FDI stocks	Mln USD	..	..	..	..	178 418	164 290	185 182	201 003
Inflows of foreign direct investment	Mln USD	..	902	3 405	8 864	5 410	4 413	4 701	5 488
Outflows of foreign direct investment	Mln USD	..	12 898	10 299	19 599	23 582	14 833	12 936	8 861
Prices and interest rates									
Inflation rate: all items	Annual growth %	0.7	3.4	2.2	1.3	2.4	4.2	3.8	2.6
Inflation rate: all items non food non energy	Annual growth %	1.0	1.7	1.4	0.7	1.1	2.2	3.0	1.6
Inflation rate: food	Annual growth %	-1.2	6.0	2.2	0.7	4.5	5.6	4.7	2.8
Inflation rate: energy	Annual growth %	4.4	5.1	5.7	5.1	3.7	8.7	6.0	5.8
Producer Price Indices (PPI): manufacturing	Annual growth %	0.8	8.0	1.4	1.9	3.6	3.4	-2.6	2.9
Long-term interest rates	%	5.78	6.90	5.22	5.23	5.48	6.07	6.12	5.78
Purchasing power and exchange rates									
Purchasing power parities	PLN per USD	1.84	1.86	1.87	1.84	1.84	1.85	1.86	1.87
Exchange rates	PLN per USD	3.89	3.66	3.24	3.10	2.77	2.41	3.12	3.02
Indices of price levels	OECD = 100	49	50	57	60	64	73	59	60
Energy supply									

and prices									
Total primary energy supply (TPES)	Mtoe	91.1	91.4	92.4	97.0	96.7	97.9	94.0	101.7
Total primary energy supply per capita	Toe per capita	2.39	2.39	2.42	2.54	2.54	2.57	2.46	2.67
TPES per unit of GDP at 2000 prices and PPPs	Toe per '000 USD	0.21	0.20	0.20	0.19	0.18	0.17	0.16	0.17
Renewables' contribution to total primary energy supply	%	4.6	4.7	4.8	4.8	5.0	5.7	6.7	6.9
Crude oil import prices	USD per barrel	..	..	..	..	..	94.02	60.83	77.89
Information and Communications Technology (ICT)									
ICT investment in non-residential fixed capital formation	%	..	..	..	..	..	..	..	..
ICT related occupations: total employment	%	..	..	..	..	..	..	..	19.5
Households with access to the Internet	%	..	..	30.4	..	..	47.6	58.6	..
Environment									
Water abstractions	Mln m^3	..	..	300	..	..	..	300	..
Fish landings in domestic and foreign ports	'000 tonnes	160	174	136	126	133	..	..	..
Aquaculture	'000 tonnes	32	35	38	35	..	..	..	..
Municipal waste total	'000 tonnes	..	..	..	..	..	..	12 050	..
Municipal waste per capita	Kg	..	..	320	..	..	..	320	..
CO_2 emissions from fuel combustion	Mln tonnes	290	293	293	304	304	299	287	..
Education									

Tertiary attainment in population aged 25-64	%	..	..	..	..	..	..	21.2	..
Expenditure per student: non-tertiary, 2008 prices	USD constant PPPs	..	..	..	..	..	4 681.5	..	..
Expenditure per student: tertiary, 2008 prices	USD constant PPPs	..	..	..	..	..	7 063.1	..	..
Employment									
Employment rate in population aged 15-24	%	19.6	20.0	20.9	24.0	25.8	27.3	26.8	26.3
Employment rate in population aged 25-54	%	67.6	68.3	69.5	71.8	74.9	77.5	77.6	77.1
Employment rate in population aged 55-64	%	28.6	28.0	29.1	28.1	29.7	31.6	32.3	34.0
Incidence of part-time employment	%	11.5	12.0	11.7	10.8	10.1	9.3	8.7	8.7
Self-employment rate: total civilian employment	%	27.3	26.7	25.8	24.4	23.5	22.9	22.7	22.8
Self-employment rate, men: male civilian employment	%	29.8	28.9	27.9	26.6	25.5	25.0	24.9	25.1
Self-employment rate, women: female civilian employment	%	24.3	24.1	23.1	21.8	20.9	20.4	20.1	19.9
Unemployment									
Unemployment rate: total civilian labour force	%	19.7	19.0	17.8	13.9	9.6	7.2	8.2	9.6
Unemployment rate, men: male civilian labour	%	19.0	18.2	16.6	13.0	9.0	6.5	7.8	9.3

force									
Unemployment rate, women: female civilian labour force	%	20.5	20.0	19.2	15.0	10.4	8.0	8.7	10.0
Long-term unemployment: total unemployed	%	49.7	47.9	52.2	50.4	45.9	29.0	25.2	25.5
Labour compensation and hours worked									
Labour compensation per unit labour input, total economy	Annual growth %	1.7	1.9	1.9	1.9	4.8	9.6	5.6	..
Average time worked per person in employment	Hours per year	1 984	1 983	1 994	1 985	1 976	1 969	1 948	1 939
Research and Development (R&D)									
Gross domestic expenditure on R&D	% of GDP	0.54	0.56	0.57	0.56	0.57	0.60	0.68	..
Researchers: full-time equivalent	Per '000 employed	4.3	4.4	4.4	4.1	4.0	3.9	3.9	..
Population									
Total population	'000 persons	38 195	38 180	38 161	38 132	38 116	38 116	38 153	38 187
Population growth rates	%	-0.1	0.0	0.0	-0.1	0.0	0.0	0.1	0.1
Total fertility rates	Children	1.2	1.2	1.2	1.3	1.3	1.4	1.4	..
Youth population aged less than 15	% of population	17.5	17.0	16.5	16.0	15.6	15.4	15.2	15.1
Elderly population aged 65 and over	% of population	12.9	13.0	13.2	13.3	13.4	13.5	13.5	13.5
International migration									
Net migration rate	Per '000 inhabitants	-0.4	-0.2	-0.3	-0.9	-0.5	-0.4	0.0	..

Foreign-born population	% of population	..	..	..	..	..	..	..	..
Foreign population	% of population	..	..	..	0.1	0.2	0.2	0.1	..
Unemployment rate of native-born men	% of labour force	..	..	..	..	..	..	..	..
Unemployment rate of foreign-born men	% of labour force	..	..	..	..	..	..	..	..
Unemployment rate of native-born women	% of labour force	..	..	..	..	..	..	..	..
Unemployment rate of foreign-born women	% of labour force	..	..	..	..	..	..	..	..
Health									
Life expectancy at birth	Years	74.7	75.0	75.1	75.3	75.3	75.6	75.8	..
Life expectancy at birth: men	Years	70.5	70.7	70.8	70.9	71.0	71.3	71.5	..
Life expectancy at birth: women	Years	78.8	79.2	79.4	79.6	79.7	80.0	80.0	..
Infant mortality	Per '000	7.0	6.8	6.4	6.0	6.0	5.6	5.6	..
Overweight and obese aged 15 and over	% of population	..	45.3	..	..	..	..	..	..
Society									
Suicide rates	Per 100 000 persons	..	..	..	..	..	..	12.9	..
Youths 20-24 not in education nor employment	%	3.3	2.6	1.7	3.8	2.5	2.4	3.6	..
Youths 15-19 not in education nor employment	%	25.5	24.1	20.1	20.7	18.3	15.6	16.4	..
Transport									
Goods transport	Mln tonne-km	160 305	188 670	196 377	216 938	238 631	248 787	258 858	..
Passenger transport	Mln passenger-km	222 039	230 244	244 498	265 628	286 143	320 489	328 051	..
Road fatalities	Per mln	148	150	143	138	147	143	120	..

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	Not available
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OECD Factbook statistics.
For explanatory notes, seeOECD Factbook 2011-2012(DOI: 10.1787/factbook-2011-en)