Utilizing Monetary & Fiscal Policy

Mandi Tabaku
Walsh College of Accountancy and Business, MI, United States
tabakum@gmail.com

Abstract

Monetary and fiscal policy has been around for decades, and they have been very influential instruments in steering economic activity and financial markets. It is through the understanding and implementation of such policies that governments are able to rescue their countries from recessions that could have potentially ended in economic collapse. Over the decades countries have evolved, and when faced with the great recession of 2008, they have had to take unprecedented monetary and fiscal measures. It is through the aggressive use of such measures that countries around the world were able to minimize the size and length of the great recession that started in 2008. It's by understanding and analyzing monetary and fiscal policy that a country can take successful measures towards preventing economic disasters and leading economies to their full potential. Faced with the great recession of 2008, Unites States took the biggest fiscal and policy measures ever in its history with more then a trillion dollars injected in the economy through conventional and unconventional channels. (Mankiw, n.d. 97-98) The myriad of monetary and fiscal measures implemented during the great recession of 2008 show that monetary and fiscal policy is still an evolving field of study and that countries should be constantly thinking of new policy measures that can be readily implemented in the event of a future economic disaster and quickly reversible once growth is achieved.

Keywords: *Monetary policiy, Fiscal policy, Financial market*

Monetary Policy

Monetary policy is influenced by decisions that central banks make to the nation's coin, currency, and banking. A central bank is setup by elected representatives of a country, and it's allowed to operate independently. Examples of central banks include the United States Federal Reserve (known as the Fed), the Bank of England, European Central Bank, etc. These central banks play a significant role and influence in the lives of their citizens. Monetary policy is the central bank's control over the money supply. (Mankiw, n.d. 81, 86) Through the control in the money supply central banks aims at achieving a target federal funds rate and exert influence over interest rates, inflation and other factors in the economy. The goal of monetary policy is to influence monetary and credit conditions in the economy towards the achievement of maximum employment, stable prices, stable long-term interest rates, ensuring the supervision and safety of the nation's banking and financial institutions, and others. (The Federal Reserve, n.d., 1)

The importance of Central Banks

Despite monetary policy being one of the most important tools that the government has in its disposal, the actual monetary policy is assigned to a central bank for handling. The central bank is an independent entity from the elected government. The reason an independent institution handles monetary policy is because elected policymakers would find it in their interest to promise low and stable inflation to consumers and businesses, and when time came, they would be inclined to increase the money supply and put upward pressure on inflation. (Mathai, 2012) The promise of low inflation would lead to inflation expectations being low and would foster more optimism and stability in the financial market. The increase of the money supply on the other hand would lead to an increase in business activity and stimulate economic growth. Such increase in the money supply would create the opposite effect of a stable low inflation, and it would actually cause an "inflation surprise". This surprise in the actual inflation would initially increase output, due to labor wages changing slowly, and it would reduce the real value of government debt. This inflation surprise would create an economic boom, which would not be sustained for long. Consumers and business would increase their expectations of upcoming prices increases, and businesses would actually start increasing their prices for goods and services and decrease employment. (Mathai, 2012) Such expectations of growth in prices due to the high inflation surprise would than lead to instability in the financial markets.

Furthermore, inflation surprises would make it hard to achieve low inflation because consumers and business will expect further future inflation surprises. Thus, consumers and businesses will take measures that fall in line with upcoming potential high inflation. An alternate solution to such a phenomena would be the delegation of monetary policy to an independent central bank. Such an independent institution would make its monetary policies separate from the political process. This would increase the confidence of the consumers and businesses toward the central bank's commitment to low inflation and stability in the financial market. The use of a central bank in implementing monetary policy is already used around the world by different countries, and it has predominantly proven successful in keeping inflation more stable and at lower levels. (Mathai, 2012)

Money Supply

Money supply plays the most important role in implementing monetary policy. It is through the change in the money supply that the government can influence the economy towards achieving both inflation and growth objectives. In an economic recession, for example, investments go down and lead to higher unemployment. Higher unemployment spreads fear in the consumer market prompting people to spend less, which in turn affects retail profits. Such decrease in consumption leads to decreases in production and a further increase in unemployment. It is through the use of monetary policy that the central bank is able to influence the economy in the opposite direction. The central bank does so by changing the money supply. Through the expansion of the money supply the central bank is able to influence the growth of investments by making funds available at a cheaper price and more accessible for businesses and consumers. This in turn leads to an increased demand for goods and services, thus, it leads an expansion in economic output and employment. The growth in the overall demand for goods and services eventually starts putting pressure on employee wages and prices. Ultimately, the pressure on prices and wages affects inflation for the worse. A high increase in inflation is an undesired outcome for the central bank and the stability of the economy. When such inflation reaches undesired levels, the central bank takes contractional monetary policy measures to put downward pressure on inflation. (Mathai, 2012) Even though the change in the money supply is the main monetary instrument used in influencing the financial markets, in itself the money supply is determined by the intertwining between the central bank's decision about how much money to create, the banks' decision whether or not to hold deposits as reserves, and the households' decisions to hold their money in the form of currency or demand deposits. (Mankiw, n.d., 93)

The central bank's decision about how much money to create for the public to hold as currency (C) and by the banks to hold as reserves (R) is called the monetary base (B). The monetary base is directly controlled by the central bank and denoted by the formula:

$$B = C + R$$

The money supply is represented by the sum of currency (C) and demand deposits (D). Demand deposits are the amount of money that are held in accounts from which individuals can withdraw and have access to their money at any time without having to give any prior notice. The formula of the money supply in our case is represented by:

$$M = C + D$$

To show the relationship between the monetary base, the banks' decision whether to hold deposits as reserve or lend them out, and the households' decision about whether to hold their money in the form of currency or demand deposits, we divide the equation of the money supply with the equation of the monetary base:

$$M / B = (C + D) / (C + R)$$

When we divide by D both the top and bottom of the left side we get:

$$M / B = (C / D + 1) / (C / D + R / D)$$

In this equation, C / D is the households' decision on how much money to hold in the form of currency (C) as a fraction, or as compared to the amount of money they hold as demand deposits (D). C / D is known as the currency-deposit ratio (cr) and it reflects the preferences of households about the form of money they wish to hold. Furthermore, in the equation, R / D is the fraction of deposits banks decide to hold as reserves. R / D is also known as the reserve-deposit ratio (rr), and it is determined by the business policies of banks and the laws by which they are regulated. (Mankiw, n.d., 94)

When we substitute in the currency-deposit ratio (cr) and the reserve-deposit ratio (rr) in the equation and move the monetary base to the right side of the equation we get:

$$M = B \times (cr + 1) / (cr + rr)$$

From this equation we see how those three variables affect the money supply. The direct relationship between the monetary base and the money supply means that the increase in the monetary base will directly increase the money supply. Additionally, a decrease in the reserve-deposit ratio means the banks will have more money to lend out. This means that every dollar lent that is not on reserve

will create more money then its base value, thus, increasing the money supply. Furthermore, a decrease in the currency-deposit ratio means that the public holds less money in the form of currency and more in the form of demand deposits increasing the reserves of banks. In turn, banks can use those additional reserves to lend even more money and further increase the money supply. (Mankiw, n.d., 95)

Central Bank's influence on the Money Supply

In the previous section we described the relationship that the money supply had with the monetary base, reserve-deposit ratio, and the currency-deposit ratio. Despite knowing how each of those factors influences the money supply, in this section we will discuss how the central bank goes about influencing each of those three factors to bring about change in the money supply. When dealing with the monetary base the central bank has a direct influence. Central banks affect the monetary base mainly through open-market operations. Open-market operations is the activity in which a central bank engages in the purchase and sale of securities, mainly U.S. Treasury securities, in the open market to influence the amount of Federal Reserve balances available to depository institutions, thereby influencing the overall monetary and credit conditions. (Mankiw, n.d., 95) By expanding the balances available to depository institutions, the central bank ultimately expands the availability of credit in the financial markets and thereby increasing the money supply in the economy. The contrary will happen if the central bank decides to reduce the balances available to depository institutions. The central bank uses such instrument almost on a daily bases at the New York securities market. In addition to open-market operations, a central bank also influences the monetary base when it acts as a lander of last resort by lending funds to banks and other depository institutions that are in need of reserves to meet minimum regulation requirements, handle daily customer withdraw traffic, make new loans or investments, etc. The way banks go about borrowing reserves from the central bank is through the discount window. At the discount window the central bank determines the rate at which it will lend to depository institutions, such as banks and credit unions, and the depository institutions decide the amount that they want to borrow. Since the central bank is the entity that decides the interest rate at the discount window, also known as the discount rate, it is able to raise or lower the interest rate depending on the monetary policy that it wants to follow. If the central bank's intention were to increase the monetary base and money supply, than the central bank would lower the discount rate to incentivize depository institutions to borrow more. (Mankiw, n.d., 96) The lower the discount rate the more banks will borrow, which will lead to a greater increase in the money supply.

Central banks may have a direct influence on the monetary base through open market operations, which in turn influences the money supply, but the influence is not the same towards the reserve-deposit ratio and the currency-deposit ratio. One way that the central bank influences the reserve-deposit ratio is by implementing regulations that impose a minimum reserve-deposit ratio on banks. By increasing the minimum amount of reserves required for depository institutions to keep at the central bank, they increase the reserve-deposit ratio, thereby decreasing the amount of funds available to banks and credit unions for activities such as lending and investments. Ultimately, such decrease in lending and investments decreases the money supply. The central bank can also do the vice versa to increase the money supply by lowering the minimum reserve deposit requirements for these depository institutions. This last monetary instrument has been used less and less in the recent years due to banks holding excess reserves above the minimum required of them by law. (Mankiw, n.d., 96) Nonetheless, it is one way that central banks can influence the reserve-deposit ratio and ultimately the money supply. Even though in Unites States this method is not as affective as it could be, increasing or decreasing the minimum reserve requirements can play a significant role in countries where banks and other depository institutions utilize all of their excess reserves towards investments and other profit generating activities. The influence that a central bank has on the currency-deposit ratio is almost insignificant. This is because, people's preferences of whether to keep the money as currency or as demand deposits, it's something that is mainly affected by the state of the economy rather then by what a central bank can do. It is fear of losing one's wealth that is the biggest incentive that dictates the fluctuation in the currency-deposit ratio. For example, during the great recession of 2008, people lost a lot of faith in banks and other financial institutions and their ability to protect people's wealth. This was due to the many bankruptcies that swept the financial industry during the 2008 to 2009 period. (Mankiw, n.d., 590) It is such events push people to hold money as currency rather then depositing them to a financial institution.

In 2008, the importance of a section in the formula of the money supply became evident: specifically the (cr + 1) / (cr + rr) part of the money supply formula M = B x (cr + 1) / (cr + rr). The (cr + 1) / (cr + rr) section is also known as the money multiplier. (Mankiw, n.d., 94) Though, central banks have significant influence on the monetary base, it is only by the choices that people and depository institutions make with their money, that determines the magnitude of the influence that such central banks have on the money supply. During the great recession of 2008, the United States Federal Reserve Bank increased the monetary base by over 400%, by purchasing a vast amount of securities and increasing the reserves of depository institutions. (Mankiw, n.d. 98) The Federal Reserve Bank of Unites states purchased a large amount of mortgage-backed securities to try to stabilize

the mortgage market, and they also bought long-term government bonds to keep long-term interest rates low. Nonetheless, these and other drastic measures that the Federal Reserve took to increase the availability of funds to depository institutions, only skyrocketed the monetary base, but did not quite have the big impact in the money supply that they were hoping for. The 400-500% increase in the monetary base only increased the cash and checking deposits by 100% and other less liquid assets such as savings deposits, money market mutual funds and other deposits by 55%. The main reason that the impact on the money supply was so low, it was due to the big increase in the rr value in the money multiplier formula. Financial institutions decided to hold as excess reserves most of the money made available to them by the Federal Reserve Bank rather then give the funds out as loans to the public or invest it. Excess reserves increased from $1.5 billion in 2007 to about 2.5 trillion until 2014. (Mankiw, n.d. 97-98) These huge amounts of excess reserves increased the value of the denominator in the money multiplier. This led to a money multiplier overall value of less then 1, which resulted in low changes on the overall money supply.

Federal Funds Rate and Interest Rates

Central banks implement monetary policy through their influence of the money supply. Such influence is also made possible through the central bank's influence on the federal funds rate. The federal funs rate is the interest rate that banks change one-another at the federal funds market for balances that they hold with the central bank. It is through influencing this federal funds rate that the central bank tries to carry out its monetary policy strategy. In Unites States, the Federal Open Market Committee (FOMC) and the Board of Governors is in charge of promoting effectively the goals set by the Federal Reserve Act for maximum employment, stable inflation and prices, and moderate long-term interest rates. When the inflation rate is low and stable, and it's expected to remain so, the prices of goods, services, materials, and labor do not fluctuate much. The stability in the inflation rate and in short- and long-term interest rates builds a confidence in individuals and businesses that jobs are safer and the funds that they have are not at risk of getting severely devalued. (The Federal Reserve, n.d., 15) This in turn reduces their fears and the need to take actions to protect against loss of value or wages, and it makes individuals and businesses more prone to saving and investing. Even though price stability of goods, services and inflation can help achieve maximum growth and employment over the longer run, in the short-run on the other hand, it can happen where a sharp increase in energy prices can put upward pressure on inflation and increased pressure on unemployment. In this case, central banks are caught up in a dilemma of whether to lower inflation

pressures or stop unemployment losses. Taking measures to contain inflation would weaken the economy more and have a negative influence on employment. On the other hand, taking measures to help employment would put more upward pressure on inflation. At that point, central banks would have to make a decision on what is most important for the economy. Despite the potential for the short-term dilemma that central banks could be faced with, they can enhance the ability of the financial system to sustain and handle shocks through monetary strategy. When promoting the goals of the Federal Reserve Act, the Federal Open Market Committee (FOMC) sets a target federal funds rate that they believe will cultivate financial and monetary conditions congruent to the achieving of its monetary policy objectives. (The Federal Reserve, n.d., 15-16)

A change in the federal funds rate or even a change in the expectation of the future level of the federal funds rate can have a significant influence in the whole economy. Such changes can influence other short-term rates, long-term interest rates, stock prices and the foreign exchange value of the dollar. These factors can lead to changes in household and business spending decisions. (The Federal Reserve, n.d., 16) Ultimately, changes in the household and business spending decisions effect demand for goods and services throughout the whole economy. Short-term interest rates are affected by both the current federal funds rate and the expected future value of the funds rate. If the central bank surprised the market participants with a high federal funds rate, it will cause interest rates to also increase. This increase in the interest rates will happen despite the FOMC target rate that is why it is important for the central bank to keep the federal funds rate stable around the target rate set by the Federal Open Market Committee (FOMC). A stable federal funds rate will also provide greater stability on interest rates. (The Federal Reserve, n.d., 16-17) In Unites States, the central bank uses reserve balance requirements and contractual clearing balances to help predict demand for balances at the Federal Reserve. (The Federal Reserve, n.d., 36) The forecasts that the central bank makes extend for weeks into the future, and by manipulating the supply of Federal Reserve balances, the central bank keeps the federal funds rate around its target value. Long-term, the central bank manipulates the supply of Federal Reserve balances through long-term repurchase and reverse purchase agreements. Daily or short-term, when the Federal Reserve Bank of Unites States sees that there is an imbalance between the supply and demand for Federal Reserve balances, it uses short-term repurchase or reverse purchase agreements to keep the federal funds rate more stable around the FOMC target rate. (The Federal Reserve, n.d., 38) When short-term rates are influenced by changes in the federal funds rate, those in turn influence long-term interest rates, such as Treasury notes, corporate bonds, auto loans, and other loans. The long-term interest rates get affected because they reflect, among other things, not only the current values of short-term rates but also

the expectations about short-term rates over the rest of the life of the long-term contract. ("How does monetary," n.d.) Changes in the long-term interest rates will also have an affect in stock prices. When individuals or business invest, they take into consideration the profits that can come from bonds in comparison to potential profits from stocks. Additionally, low long-term interest rates could signify for investors that the economy will be stronger and profits from the appreciation of stock prices will also be higher. Thus, low long-term interest rates will make stock purchases more lucrative due to the diminishing returns on bonds and belief of a stronger economy ahead. This in turn will also put up-word pressure on stock prices in the present. (The Federal Reserve, n.d., 17)

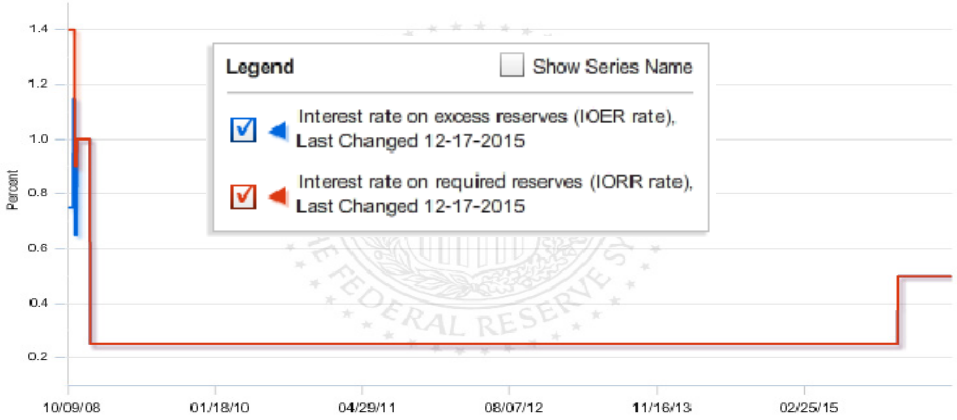
Furthermore, lower or higher interest rates will also affect the exchange rate of the domestic currency, which in turn will also affect exports and imports for the country. An increase in interest rates would cause more demand for the domestic currency, because outside investors would want to take advantage of the high domestic interest rates to increase their returns. This higher demand for the domestic currency would than cause an increase in the value of the domestic currency. The strengthening of the value of the domestic currency causes a decrease in the price of imports and an increase in the price of exports. (The Federal Reserve, n.d., 17) A stronger domestic currency means that for the same price of imports outsiders that export the product to us will get paid more once they convert our currency. With an increase in the value of the domestic currency, imports can be sold for cheaper and still provide the same profit to the international seller once the domestic currency is exchanged into the international seller's currency. So imports can be sold for cheaper and be more competitive in the domestic market, or the importers can decide to just take the higher profits. Either way, a domestic currency appreciation will lead to an increase in the amount of imports. On the other hand, the strengthening of the domestic currency will decrease the exports of domestic products. The same price of the domestic products being exported will be more expansive when sold at an international market to bring in the same profit, or exporters would have to settle for less profits if they decide to keep the same price on the markets those products get exported on. Either way, exporters will be less inclined to export and more inclined to sell domestically. Furthermore, a lower federal funds rate which leads to lower interest rates, a lower exchange value of the domestic currency, and higher stock prices will stimulate individuals and businesses to spend more. Lower interest rates will make it cheaper to borrow, which can motivate investors to take on different projects that otherwise would have provided a low margin of profit. Lower consumer loan rates and mortgage rate, due to the low interest rates, will increase the demand for houses, cars, boats and similar big-ticket items. Furthermore, lower mortgage rates will increase the number of people that decide to do refinances on their mortgages, and reduce

future housing costs. (The Federal Reserve, n.d., 18) Such reduction in mortgage rates will free up more cash available to be spent on other goods and services that otherwise would have not been possible. Thus, a lower rate for borrowing will promote more borrowing of funds, thereby increasing investments and spending throughout the economy. This overall increase in demand will also influence the need for more goods and services; goods and services that will require increased employment to produce the necessary supply to meet the new demand. The raise in the federal funds rate will have the opposite affect in the economy, and it will lead to the lowering of the aggregate demand and employment rate. (The Federal Reserve, n.d., 18) There comes a point where stimulating the growth of the economy will lead to increased pressure on inflation in which case central banks have to take more restrictive measures to try to keep inflation in check.

Until the economic crash of 2008, the main and most used instrument of stabilizing the federal funds rate around the target rate set by the FOMC has been through the purchase and selling of securities through open market operations. This was used by the Federal Reserve Bank of Unites States to influence the amount of reserves that banks kept with the Federal Reserve. Due to the severity of the financial crises, the amount of the liquidity that the Federal Reserve made available through the purchase of securities increased the excess reserves that banks kept at the Federal Reserve to staggering amounts. This increase in the excess reserves over a short period of time was causing increased downward pressure on the federal funds rate making it harder and harder to keep it in alignment with the FOMC target rate. The downward pressure created from these excess reserves was due to the competitiveness in overnight rates on the lending of excess reserves from one bank to another. (Bernake & Kohn, 2016) To better control the federal funds rate, the Congress granted authority to the Federal Reserve Bank to pay interest to banks and other depository institutions that had their reserves with the Federal Reserve Bank. This was implemented in 2008, and due to the fast deterioration of the economy, FOMC set its target federal funds rate to 0 - 0.25%. ("Interest on Required," 2016) After setting this target rate, the Federal Reserve Bank decided to put the amount of the interest rate it pays on required and excess reserves to 0.25%, as shown in the figure 1.

This 0.25% rate, for just keeping the reserves with the central bank, made it so banks and other depository institutions would not be inconvenienced to figure out ways on where to move their money so their excess funds would not be non-interest baring. Furthermore, putting the interest rate the same as the upper value of the FOMC target rate made it so banks would not try to pressure the actual federal funds rate below the interest they were earning just by doing nothing with their excess reserves. In addition, this move by the Federal Reserve Bank was done to also control any future changes in the federal funds rate. (Bernake & Kohn,

FIGURE 1: U.S. Federal Reserve's interest rate on required & excess reserves



Source: United States Federal Reserve Bank of St. Lewis

2016) The target rate of 0-0.25% was kept from December 16th, 2008, and all the way to December 16th, 2015. ("Change to the Payment," 2015) After that, the Federal Reserve Bank decided to raise the interest it paid on reserves from 0.25% to 0.5%, in accordance with the increase in the FOMC target rate from 0.25%-0.5%, which continues to be current. ("Open Market," 2015) The introduction of paying interest on reserves plays a significant role in smoothly implementing monetary policy. By better being able to keep the actual federal funds rate in line with the FOMC target rate, the Federal Reserve Bank is able to have a better influence on short-term interest rates charged by banks and other financial institutions to individuals and business, and in turn having a better influence on the overall financial condition of the economy. Such practice of paying interest rates on reserves is also practiced by many other central banks around the world, such as: the bank of England, the European Central Bank, the bank of Japan, and an number of other central banks. (Bernake & Kohn, 2016)

Inflation

Inflation plays a significant role in the economy and in the selection of monetary policy. Inflation is defined as the percentage increase in the average level of prices. (Mankiw, n.d. 105) When trying to determine the value of inflation in the economy, the Federal Reserve Bank of United States looks at a number of different indexes. This is because different indexes measure the changes in price of different products and services. Some of the main indexes that the Unites States Central Bank looks at is the Personal Consumption Expenditure Index which

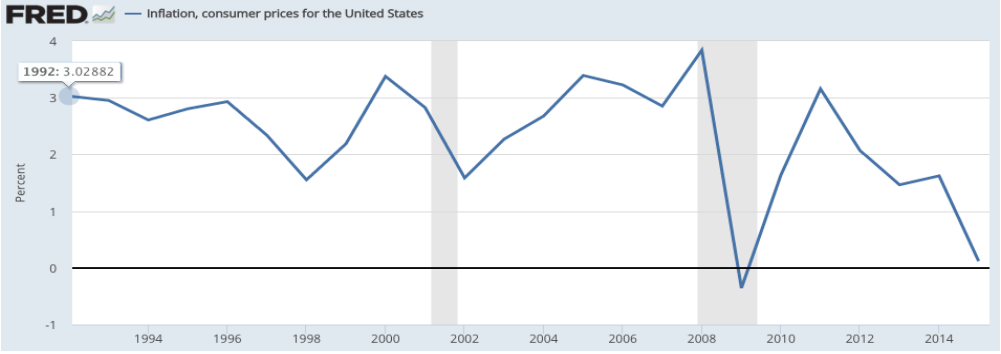
covers a wide range of household spending, and they also look at the Consumer Price Index and the Producer Price Index, which measure other prices paid for goods, services, wholesale and commodities. ("What is inflation," 2015) Despite monitoring those inflation measures, the Federal Reserve also takes other steps when evaluating the rate of inflation. First of, inflation is not determined by observing the data from a specific day or week. On the contrary, central banks take into account the average inflation from a few months or even a year or more, to have a better value that represents the trend of the economy. Furthermore, the Federal Reserve Bank constantly monitors a big number of indexes to observe whether a certain high spike in inflations could have been due to a specific short-term event of a certain section of the economy. This way, the Federal Reserve is better equipped at concluding if a certain abrupt change in inflation is likely to continue in the long run and determine if any necessary actions need to be taken. Another final step that the Federal Reserve takes in consideration is excluding items with volatile prices that tend to go up and down considerably and often. Items such as food and energy tend to fluctuate considerably and very often, and a spike in one quarter usually tends to be followed by the opposite effect on the next quarter. Even though food and energy play a big role in the lives of individuals and business, due to their high price volatility, the Federal Reserve excludes them from being taken into account when determining a trend in the value of inflation. ("What is inflation," 2015)

Inflation is mainly influenced by the money supply. If the money supply in the economy increases considerably within a short period of time, than inflation will also increase rapidly. If the money supply is kept at stable amounts or growing at a stable rate, than inflation will also be more stable. It is through the money supply that, a central bank aims not only at stabilizing the inflation rate, but also stabilizing inflation at a certain specific rate. (Mankiw, n.d. 110) When a central bank lowers the federal funds rate by increasing the money supply though open market operations, it also pressures interest rates to lower, thereby making credit more affordable. This increases the demand for credit. If credit is extended to these individuals and businesses, than the credit given by banks and other financial institutions will cause an increase in the money supply in the economy. The increased money supply causes an increase in the demand for goods and services. Such increase in demand for goods and services requires more workers and materials to meet the new demand. This, in turn results in increased prices for goods and services to pay for the extra labor and increased wages. (Mathai, 2012) Such increased prices for goods and services also put increased pressure on the value of inflation.

The Federal Reserve Bank of Unites States aims to keep the inflation rate stabilized around 2%. They claim that the rate of 2% provides the best economic

environment for price stability and maximum employment. A lower inflation rate then 2% would make it likely for an economy to experience harmful deflation in case of an economic downturn. ("Why does," 2015) If inflation would be higher then the 2%, it would make it harder for individuals and business to manage their long-term goals, savings and investment decisions. A 2% inflation has more benefits. It is hard to cut people's wages, and it is also harder for them to accept such wage cuts, which can lead to people quitting their jobs and start looking for another job, thereby creating instability in a workplace. If companies are giving a 3% wage increase in an economy with 2% inflation, than they are only really increasing real wages by 1%. In case of an economic downturn, companies can decide to not give raises, or maybe only give a 1-2% raise in an economy where the inflation is 5%. (Mankiw, n.d. 123-125) In reality, this would be a devaluing or lowering of wages by 3-4%, while at the same time telling the workforce that they are going to still receive a small raise. This increases morale, work productivity, and it even strengthens individual loyalty to a firm. (Mankiw, n.d. 126) The goal of not letting inflation go too high and keeping it around 2% is also shown on the figure below:

GRAPH 1: Inflation, consumer prices for United States



Source: United States Federal Reserve Bank of St. Lewis

Unless inflation is very high, the regular everyday working individual will not keep track of inflation and will rather hear that they are getting a raise as compared to wage cuts. Cutting wages without actually implementing wage cuts cannot be possible in a world with zero inflation. (Mankiw, n.d. 126) Despite this benefit, inflation also has costs to individuals and businesses. One cost of inflation is that it causes business to change the product prices more often, and thus causing them to change the prices of their menus more often. The higher the inflation the higher will be the expenses of businesses for having to print out their menus more often.

A second cost of inflation is to companies that print out catalogs yearly. These catalogs have all the products of a company and their prices from which other companies and individuals can order products throughout the year at the same price. With inflation, these products become cheaper and cheaper as months go by, thus, devaluing profits as the year comes to an end and discouraging buyers from purchasing during the beginning of the year. Such phenomenon leads to inefficiencies in the allocation of resources. A third cost of inflation has to do with paying taxes on gains from stocks. Whenever you sell a stock for a higher price than it was bought, than taxes need to be paid on the profit. But, for example, if inflation is 7% and you just sold for $107 a stock that was purchased for 100$, then you will have to pay taxes on the 7$ difference. (Mankiw, n.d. 122) In this example you are paying taxes on the 7% profit when in reality you did not make any profit, because the 7% was reduced by inflation. Thus taxation does not happen on the real profit which accounts for inflation but it happens on the nominal profit, which is the real profit + the inflation rate. When dealing with large sums of money, inflation can cause significant losses through taxation.

A forth cost of inflation has to do with the constant change of the value of money, especially when deciding to measure savings and retirement goals. (Mankiw, n.d. 123) When thinking about the amount of money an individual would like to retire on, they cannot just look at the value of money now and say that a certain amount will be enough for when they retire. An individual has to actually take into account for the devaluation of money by inflation. So, if an individual just puts his money on the side as cash, by the time that individual retires, they will have lost a lot of purchasing power from inflation. In a way, they get penalized for saving money a certain way (in this case as currency). Thus, an individual has to actually invest their money to at least break even with the real value of the money they are saving year after year. The higher the inflation the harder will be to not lose money. A $1000 saved today it's a 50$ loss in a year on a 5% inflation. All these costs are costs of expected inflation. What about costs from unexpected inflation? Unexpected rates of inflation can hurt both businesses and individuals. The central bank of Unites States has a 2% goal for the rate of inflation. ("Why does," 2015) When a bank or other financial institutions gives out a loan at a fixed interest rate, they take into account a 2-3% rate of inflation and a 2-3% profit on top of the inflation rate. So the bank could possible charge about 4-6% interest on a loan. In the example, instead of 2-3%, if inflation averaged at about 4%, than the creditor would experience significant unplanned losses on the loans that the creditor has given out for that period. The creditor would go from a 2-3% projected real profit to a 1% or no real profits by the end of the loan. (Mankiw, n.d. 123-124) Such losses can impact the maintenance of current investments or the ability to take advantage of beneficial future investments. Furthermore, inflation can also hurt

individuals with fixed pensions. When inflation averages higher then planned by the pension provider, when retiring, individuals will have a pension that is worth less then they had planned. To prevent for such risks, contracts should be done to take into account for variable inflation. (Mankiw, n.d. 123-124) That way there will be more stability for both the creditor and the debtor. Inflation plays a significant role in the stability of an economy. By keeping inflation stable at lower levels, a central bank is able to spread more stability in the financial markets, which in turn promotes savings, investments and an overall healthy economy.

The Great Recession of 2008

During the financial crises that started in 2008, the Federal Reserve of United States took not only extreme monetary policy measures, but it also set up a variety of new mechanisms to help the economy. The Federal Reserve Bank of United States, decreased the target federal funds rate to the lowest rate it could be, to 0-0.25%. ("Open Market," 2015) Also, they purchased long-term mortgage-backed securities and notes to try to stabilize the mortgage market. Furthermore, the Federal Reserve purchased long-term Treasury bonds and notes to help influence the lowering of long-term interest rates. ("How does monetary," n.d.) During the 2008-2009 a number of banks and financial institutions went bankrupt due to liquidity problems (liabilities exceeding assets). These and other near bankruptcies created a big loss of faith in banks and similar financial institutions. This loss of faith increased significantly the holding of currency as opposed to depositing it on banks, thus adding to the liquidity problems that banks were faced with. Until 2008, the Federal Deposit Insurance Corporation would guarantee depositors for up to $100,000 in deposits they made with bank institutions. After looking at the mass panic and distrust created towards banks during the great recession, the Federal Deposit Insurance Corporation increased the guarantee for depositors from $100,000 to $250,000. (Mankiw, n.d. 597) This was done to lower the currency-deposit ratio, which means that the public holds less money in the form of currency and more in the form of demand deposits. Such change could lead to increased reserves for banks, increase liquidity, and potentially lead to more lending to individuals and businesses.

During the 2008 crises, liquidity was the main thing that banks and other financial institutions were suffering for. They needed money fast to sustain the losses they were inquiring from mortgage-backed securities so they could sustain the big withdrawals from individuals and businesses. The Federal Reserve understood this well and it made available a lot of money for these institutions to borrow from the central bank. One way that the Federal Reserve made funds more accessible was when it lowered the target federal funds rate to 0 - 0.25%.

("Open Market," 2015) This made the borrowing cheaper from one institution to another. Furthermore, a lot of these financial institutions also had the ability to borrow directly from the discount windows of the Federal Reserve at a small rate. On these discount windows, the Federal Reserve would set the interest rate it charged for funds, and the financial institutions could borrow as much money as they needed. (Mankiw, n.d., 96) Despite the ability to borrow as much money as needed from these discount windows, some banks and other financial institutions choose to also borrow from the newly created Term Auction Facility. The Term Auction Facility was created specifically to make funds available to banks and other financially sound institutions to borrow money. The difference between the Term Auction Facility and the discount window was that unlike the discount window, Term Auction Facility would decide on the amount of funds it could make available for borrowing and the financial institutions would have to bid on the interest rate. The financial institution that could pay the highest interest rate for the funds would be able to get the funds. These interest rates would be higher then the rate from borrowing from the discount window. (Term Auction Facility [TAF], 2016) When these financial institutions could borrow from the discount window as much as they wanted, it raised the question: Why would they bid up the interest rate to borrow from the Term Auction Facility when they could just borrow as much as they needed from the Federal Reserve discount window? Many of the institutions that borrowed from the Term Auction Facility, did so, because they did not want to risk being exposed publicly that they were borrowing large sums of money from the discount window. That would be seen as a sign of weakness, and it could have led to other potentially disastrous side effects. By borrowing from the Term Auction Facility, banks and other depository institutions would seem as if they are financially liquid without having needed to borrow from the Federal Reserve's lending of last resort at the discount window. The last auction at the Term Auction Facility was done in 2010. By then banks and the other financial institutions had borrowed and were keeping funds as reserves way above the reserve requirements required of them. They were no more at risk of liquidity. (TAF, 2016) The use of the Term Auction Facility is just another way that shows the different means that the Federal Reserve had as its resource to implement monetary measures.

Fiscal Policy

Fiscal Policy is the use of government spending and taxation to promote a strong and healthy economy by lowering poverty, supporting financial systems, and helping vulnerable groups in the event of an economic crisis. The government

influences the use of resources both directly and indirectly, and this is best shown by the Gross Domestic Product (GDP) equation:

$$GDP = C + I + G + NX$$

The equation can be expanded to include taxes by the expanded equation:

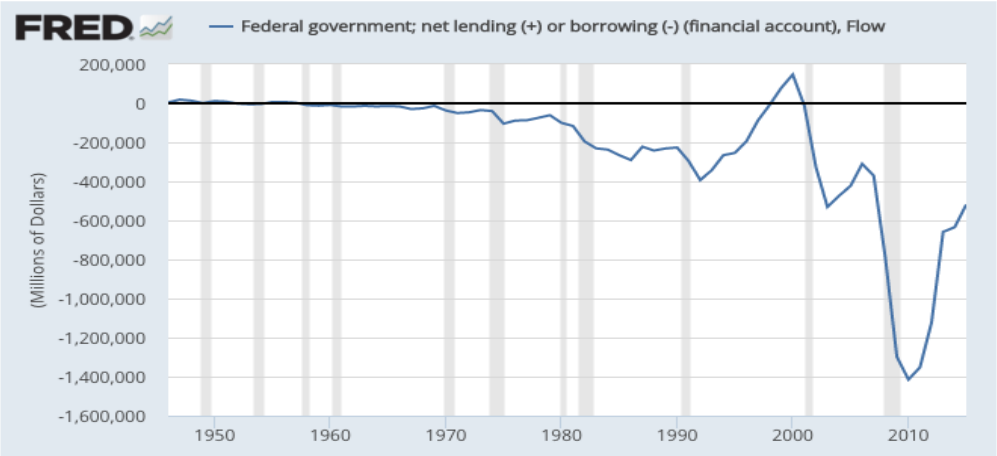
$$GDP = C\ (Y\text{-}T) + I + G + NX$$

On the left side of the equation, it's the Gross Domestic Product (GDP), which is a measure of all the goods and services produced in the economy. On the right side of the equation, it's the private consumption C(Y-T), the private investment (I), the amount of government spending (G), and net exports (NX). The private consumption conveys that consumption spending is influenced by both income (Y) and taxes (T). Through the use of fiscal policy, by increasing or lowering spending, the government can influence G directly and the other variables: C, I, and NX indirectly. (Horton & El-Ganainy, n.d.) The government plays a significant role in the output of the economy. They account for about 20% of the yearly GDP. The federal government affects the GDP through the purchase of defense ammunition, guns, missiles and purchase even the services of all the employees that are responsible to manage such good. Furthermore, the local governments influence the GDP through the purchase of goods for libraries, supplies for local government buildings, and the purchase of the services of the local government employees, such as police, public assistance, etc. In addition, the government is constantly purchasing goods and the services of employees throughout the country to fix and build new roads, perform other state and federal maintenances, start new investments, etc. (Mankiw, n.d., 69) These examples of government spending are not the only type of spending that the government does.

Other types of government spending are, also, the distribution of funds as public assistance for the poor, and the funds distributed as Social Security payments for the elderly. These transfer of payments are not included in the composition of the letter G. These transfer of payments indirectly influence the disposable income by affecting the value of T. If the government decides to increase the amount of funds it transfers to the poor and elderly, but finances this through an increase in taxes, than overall there will not be any change in the disposable income. Thus, in reality, the value of the letter T in the GDP equation is actually the amount of total taxes collected subtracting for the transfer of payments. The government finances G for its purchases with the amount of taxes that is left over after subtracting the transfer of payments from the total taxes. If G = T then the government has a balanced budget. If G is greater then T, than the government is operating on a deficit, because the mount brought in through T is not enough to cover the purchases of goods and services G. Thus, on the G > T scenario the government

has to cover the excess expenses by issuing government debt available for purchase in the financial markets. On the opposite scenario, G < T, the government is said to be operation on a budget surplus. (Mankiw, n.d. 69) This budget surplus can be used to pay some of the government's outstanding debt.

GRAPH 2: U.S Federal Government Financial Account



Source: Unites States Federal Reserve Bank of St. Lewis

The figure above illustrates that the United States government has ran a surplus only in the late 1990s. The chart also exposes how United States has been running on a deficit almost always since the late 1950s. Furthermore, the shaded vertical lines shown on the chart depict recessionary states of the economy. Throughout its past recessionary episodes, United States has ran small to mild deficits as compared to the colossal debt it had to endure to finance the great recession of 2008-2009. Fiscal policy that tries to influence the state of the economy through increasing government spending and/or lowering taxation, it's defined as using expansionary fiscal policy. On the other hand, when the government uses a fiscal policy, which involves lowering spending and/or increasing taxation, it's defined as using contractionary fiscal policy. (Horton & El-Ganainy, n.d.)

Responding with fiscal measures

Fiscal measures are the instrument of choice when trying to have a faster influence in the economy. (Thoma, 2005) The use of monetary policy, though effective, takes about one year to have its peak effect on demand and production, and about one additional year for the changes in demand and production to have their highest impact on inflation. These are estimates, and those timeframes do depend on a

number of factors, such as: the state of consumer and business confidence and how it reacts to the policy change, the stage of the business cycle, events in the global economy, the future expectations about inflation, and others. (George, King, Clementi, Budd, Buiter, Goodheart, & Vickers, n.d.)

The use of fiscal policy does induce a faster effect on the economy, but whether or not a country has the ability to implement fiscal policy, it depends on other factors. Such factors depend on whether or not the government has the means of taking advantage of new spending measures and cutting taxes. When taking into account spending measures, the government has to analyze if it has the necessary savings or budget to be able to sustain increased spending. Another measure that can help in freeing up funds for taking expansionary spending measures, it is through the restructuring of current government spending plans. When neither one of those provide the means to increase spending as a fiscal measure, the government has to reach out the financial markets by selling government debt to raise funds. (Horton & El-Ganainy, n.d.) Some governments might not be able to respond with expansionary fiscal policy due to high current inflation, high current deficit, or both. Additional stimulus could put more pressure on inflation, foreign exchange reserves, or the exchange rate. Depending on the country, more stimuli can prolong recovery by taking to many resources from the private sector. Or current low taxation practices might not leave much room for any additional tax cuts. There are a number of other reasons why a government might have difficulty with implementing fiscal policy, but in general if it can be implemented quickly and efficiently, fiscal policy is more effective then monetary policy in dealing with short-run fluctuation in the economy, higher frequency fluctuation in GDP, and employment in general. (Horton & El-Ganainy, n.d.)

Ultimately, the use of fiscal policy to stimulate the economy requires increasing government spending and lowering taxes. But to be able to use such measures recession after recession, the government also has to make the hard choices and lower spending and increase taxes when the economy starts flourishing. An increase in deficit during expansionary fiscal policy needs to be countered by contractionary fiscal policy to decrease the deficit. There is only so low tax cuts can go until they reach zero and there is only so high increased spending can go until mounting debt undermines the solvency of a country. (Thoma, 2005) It is also not possible in the long-run to use only government spending to fund expansionary fiscal policy during a recession and then when the economy grows to use increases in taxation to lower the deficit. It might work for one or two recessions, but eventually the increases in taxation will not be sustainable by the individuals and businesses. The opposite, lowering taxation and making up for it by decreasing government spending will not work, because it will eventually not be anything left to cut out of

the government or the tax rate. The main two scenarios that are sustainable in the long run are depicted below:

G↑ (recession) → G↓ (boom) → G↑ (recession) → G↓ (boom) →...
T↓ (recession) → T↑ (boom) → T↓ (recession) → T↑ (boom) →...

Only those scenarios or a variation of the two together can be used successfully in the long run. (Thoma, 2005) When government stimulates the economy by increasing government spending without changing taxes, it finances the additional funding needed by selling government debt and reducing the amount of public loanable funds available in the financial market. So now there is a smaller supply of loanable funds available for the existing demand for those funds. This shortened supply of loanable funds causes interest rates to increase, thus causing the demand for investments to decrease and stabilize with the new supply of loanable-funds. Depending on the state the economy is operating in, the affect of increasing government spending has different outcomes. When government spending increases, it causes an increase in the demand of goods and services in the economy, due to the increase in income and employment. (Mankiw, n.d., 72-73)

Fiscal policy is affected not only by the state of the economy but also by the monetary measures that the central bank takes during such fiscal measures. If government spending were increased when the economy was running at close to full capacity and the inflation was at a desired level, than the increase in government spending would increase pressures on wages and prices. This would happen because due to the economy operating at close to full potential, the increase demand caused by the increase in government spending would have to be met by incentivizing workers with wage increases to work harder and increase the prices of goods and services sold so the demand can be stabilized. If the central bank did not want inflation to increase further, then in response, the central bank would increase interest rates, thus making borrowing more costly, reducing private spending, and increasing private savings instead. (Carvalho, Eusepi, & Grisse, 2012, 3) The raising of interest rates by the central bank would counter the expansionary effects of the fiscal stimulus, resulting in lowered inflationary pressures.

In the event that the economy is in a recession, with inflation below target rates and low resource utilization then the increase in government spending would cause the desired effect of both raising demand for goods and services and increasing inflation to desired values. In this case, the central bank would be likely keep interest rates low so it can incentivize increased consumption and spending. The lowered interest rates would make it favorable and cheaper to borrow and thus boost investments and lower savings. Once the economy starts to stabilize, the central bank than can start to influence the rise in interest rates, and government spending

can be lowered. (Carvalho et al., 2012, 3) When monetary policy lowers interest rates then the effects of fiscal stimulus are going to be large. When the opposite happens and monetary policy increases interest rates, than the impact of fiscal stimulus will be less noticeable. Unlike government spending, which increases the demand for goods and services in the economy, lowering taxes increases disposable income of individuals. Usually, such deposable income is saved for when taxies rise back up again, but during a recession, lowering taxes has a different effect. During a financial crisis many individuals and business have a hard time getting access to credit due to a decrease in their private wealth. In this case, the tax reduction gives them the ability to use the extra disposable income for necessary spending, thus restoring the ability to spend. (Carvalho et al., 2012, 3) Such increased spending aids in the stabilizing of the economy and puts upward pressure on inflation.

Analyzing Fiscal Stimulus

Fiscal stimulus plays an important role in boosting the economy, but there are a number of factors to account for when deciding the right stimulus. Such factors that contribute to a successful stimulus are the size, composition, timing and duration of the fiscal stimulus. When deciding the size of the fiscal stimulus, the government looks at the difference between the output of the economy at its maximum capacity and subtracting the expected future output of the economy. So the size chosen depends on the magnitude of the output gap. Furthermore, when deciding on the size of the stimulus it is also vital to analyze and measure the effectiveness of the stimulus. Things that influence the impact of the stimulus include whether or not the monetary policy selected falls in line with the expansionary fiscal policy chosen. By having monetary policy that promotes low interest rates and not the contrary, than fiscal stimulus is not countered by the effects of high interest rates. (Horton & El-Ganainy, n.d.)

In addition, the effectiveness of the stimulus is also affected by the size of the leakages. Leakages include the amount of the stimulus that is used towards savings rather then spent, or if part of the stimulus is spent on imports. If the leakages are high than the size of the stimulus will not have the full desired outcome. Especially, if individuals and businesses suspect that the expansion will not be sustainable in the short- or long-term, then instead of investing or consuming, individuals and businesses will increase their savings or invest abroad where economic outlook might be more favorable. (Horton & El-Ganainy, n.d.) Such negative sentiment could significantly counter the efforts of the government to stimulate the economy to its desired economic output. When taking into account the composition of the stimulus the government has a number of choices where to target the stimulus. The government can choose to focus the stimulus to the poor. By targeting the poor

there will be a high chance that it will lead to the highest rate of spending, therefore resulting in a greater economic impact with fewer leakages. The government can also target the capital investment sector. By focusing the stimulus in promoting acquisition and/or in the building of manufacturing plants and machinery, the government can stimulate long-term growth and job creation. (Horton & El-Ganainy, n.d.)

Additionally, the government can opt on providing tax-cuts for businesses, which can increase employment and investments. Government can choose the composition of the stimulus to include a specific target within the economy, or it can target a variety of economic sectors with varying amount of stimulus. When it comes to timing, implementing fiscal measures often take time, but if the economic recession is going to be long, such as the great recession of 2008, than some delays are not those pressings. One thing that can help with timing is to have ready to go fiscal projects that have been analyzed beforehand and that can be implemented immediately. The factor of duration is also important, and fiscal stimulus should be targeted, quickly executable, and easily reversible when the economy stabilizes. (Horton & El-Ganainy, n.d.) Increasing government spending and lowering taxation leads to the lowering of government savings and increases government debt. The sooner expansionary fiscal stimulus expenditures can stop once the economy has bounced back from a recession, the sooner it will stop the increase in government deficit used to run the stimulus.

Automatic Stabilizers

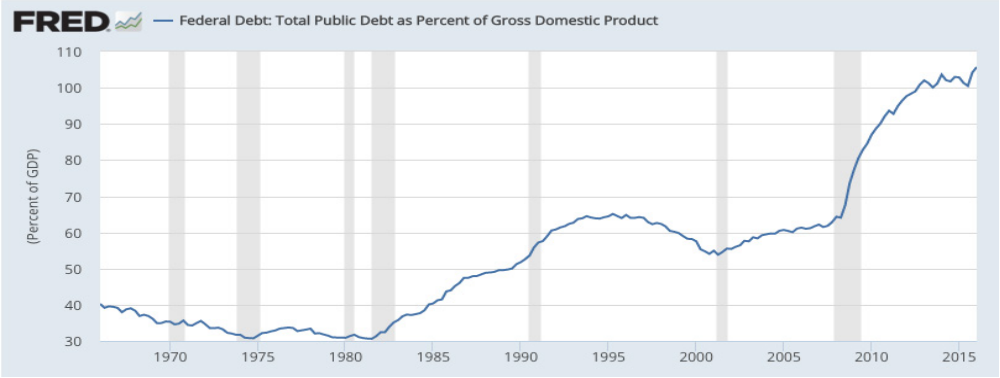
Automatic stabilizers are the natural change of different factors within the economy that take affect automatically as the economy goes into a recession or a growth. During a recession revenues from taxes decrease automatically, so businesses and individuals pay less taxes as their revenues and income fall, and unemployment also falls. During an economic downturn, individuals and businesses pay fewer taxes by falling into lower tax brackets. In addition, the unemployed start receiving unemployment benefits and the individuals with less income, depending on the income bracket, start receiving monetary and other help from social agencies. (Mankiw, n.d. 534) These changes make fiscal policy automatically expansionary during a recession and contractionary during an economic boom. Such automatic stabilizers are more influential on large advanced economies and are less influential on smaller economies. A nice trait of automatic stabilizers is that they are not prone to lags, such as when implementing regular fiscal policy, which require approval and time to implement. Furthermore, in addition to automatic stabilizers go into affect as soon as the economy goes into a recessionary state, automatic stabilizers start to automatically withdraw as the economy starts to recover. (Horton & El-

Ganainy, n.d.) Thus, in sizeable and complex economies where stabilizers are large, the need for a full on stimulus might not be necessary.

The 2008 global crises

The global crises that started due to the Unites States mortgage market meltdown affected economies around the world. Troubles in the financial sector and low confidence effected negatively private consumption, investment, and international trade. Such changes influenced negatively the output GDP of such countries. (Horton & El-Ganainy, n.d.) Even though developed countries had on their side the impact of automatic stabilizers, just like Unites States, many countries had to still resort on the use of fiscal stimulus. (Carvalho et al., 2012, 2)The effect of the 2008 global crises caused big fiscal deficits and raised debt to GDP ratios on many countries.

GRAPH3: US Federal Debit: DEBT AS % OF GDP



Source: United States Federal Reserve Bank of St. Lewis

Above, the chart of the United States' Debt as percentage of GDP illustrates the major negative impact of running long-term monetary and fiscal stimulus from 2008 to about 2013. Though, many countries can afford to run moderate fiscal policies for an extended period, mounting deficits that grow to large and linger for extended periods of time can undermine the trust and confidence that domestic and international creditors have on the ability of a country to meet present and future repayment obligations. In late 2008, while being aware of such risks and observing the deep impact of the crisis, the International Monetary Fund (IMF) called on governments to establish a four-pronged fiscal policy strategy aimed at ensuring solvency. This strategy dictated that stimulus should not have permanent effects on deficits; medium-term frameworks should include necessary steps to be

taken to correct such fiscal measures once economy recovers; structural reforms should be identified and implemented for maximum growth; and countries facing medium- and long-term demographic pressures should commit to clear strategies for pension and healthcare reform. (Horton & El-Ganainy, n.d.)

During the 2008 recession, United States and other countries increased both government spending and reduced taxes. Such measures were designed to stabilize economic activity and inflation through stimulating aggregate spending. In 2008, Unites States gave around $150 billion in the form of refundable tax rebates to low- and middle-income households. United Kingdom used temporary tax cuts through 2008 to 2009 for low and medium income households. Furthermore, a number of countries, such as France, Germany, United Kingdom, and Unites States used rebate programs in the automotive industry that incentivized car owners to replace their old cars with new fuel-efficient cars. Sweden provided tax cuts in the corporate tax sector, lowered social security contributions, and it lowered the payments on personal income tax. Countries such as Netherlands, Sweden, and Unites States also increased spending in the sector of renewable energy and education. Funding for schools and educations were designed to last 1-3 years, and government spending designated for research and development was set in place for 1-8 years depending on the country. In addition, big government spending was done by a number of countries in the sector of education and transportation infrastructure. Such fiscal measures where implemented by countries such as: Australia, Belgium, France, Germany, Spain, and Unites States. Government funding for these countries was available for about 1-2 years for accelerated investments and about 3-6 years for new investments. (Reassessing Fiscal Policy, 2013) United States took part into a number of temporary and more medium-term fiscal measures, whereas other countries only implemented one or two measures that were mostly temporary.

Conclusions

Monetary and fiscal policy are the main tools with which the government tries to influence the economy and its financial markets. Such tools play a crucial role not only in trying to keep the economy stable and functioning close to its full potential, but good and timely use of monetary and fiscal policy can be the difference between experiencing a mild recession and experiencing a financial collapse. When using monetary policy, it's important for central banks to have maximum control over the money supply so they can regulate and keep the financial markets healthy. It is also important for a central bank to a set low but non zero inflationary target rate and focus to keep current inflation in line with the short- and long-term target rate. Through this practice, the central bank is able to promote stability in

the financial markets and return stability among debtors and creditors, thereby promoting savings, investments and an overall healthy economy.

Furthermore, the use of fiscal policy should, also, be taken into account when deciding on monetary measures. Monetary policy that promotes high interest rates works against the affects of running a fiscal stimulus. (Horton & El-Ganainy, n.d.) The highest impact in the economy is when monetary and fiscal policy works together to achieve the desired economic outcome. When implementing fiscal policy, it is important to take into account the size, composition, timing and duration of the policy to be implemented. It is best when fiscal measures are thought out and analyzed ahead of an upcoming recession, and for such measures to be easily implementable and quickly reversible when required. (Horton & El-Ganainy, n.d.) This is important when implementing fiscal measures, because a prolonged stimulus can induce big deficits that can undermine the liquidity of a country. With the proper monetary and fiscal tools, a country can ease the recessionary effects of an economic downturn and lead the economy close to it full growth potential.

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