ifpol: Institut für Politikwissenschaft

Westfälische Wilhelms-Universität/ University of Twente
Sommersemester 2011
Institut für Politikwissenschaft
Bachelor - Arbeit
Dozent: Prof. Dr. Young &
Prof. Dr. Konegen

THE MULTIPLIER EFFECT

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WHY ARE RESULTS SO DIFFERENT?

Marius Ehrlinspiel
Hammerstraße 100
48153 Münster
Tel. (0151-)12169067
E-Mail: marius.ehrlinspiel@googlemail.com

Matrikelnummer: 356691 /s1124730

Public Administration

Bachelor
6. Fachsemester

Abgabedatum:20.08.2011

Structure:

I.Introduction:

At a very early stage of the global financial crisis of 2008 it was clear that this would go far beyond the normal cyclical movements of the global economy. In fact, the recession was on the verge of culminating in a breakdown of the global economy. Consequently, central banks had decreased their interest rates to a level near zero. Nonetheless, unemployment rose dramatically and the financial markets were far from recovery. The control over the short term nominal interest rate, which was the main operating tool, proved incapable of solving the crisis, since further decreases in interest rates were no longer an option. These conditions significantly contributed to the resurrection of a long standing question in macroeconomics: What is the size of the fiscal multiplier? In simple terms: Is increased government spending able to solve the problem? "Increases in government spending were at least a dimension on which it was possible for governments to do more" (Woodford,2011,p.1).

Governments from the United Stated of America, Europe and Japan "hastily put together fiscal stimulus packages" (Ilzetzki, Mendoza,Végh, 2011,p.1) at the beginning of 2009. The fact that many "OECD countries initiated major stimulus packages" (Gemmel,2011,p.1), erroneously suggests that there is some kind of consensus among economists and policy makers, as to how governments should react to an economic crisis. The truth is, however, that there is a wide range of views on fiscal stimulus. Scientists and policy makers alike, have been discussing this very question for several decades. During the heyday of Keynesian economic policy in the 1960s and 1970 fiscal policy was largely considered an effective tool to stabilize the economy. Fiscal policy was used to complement the means of monetary policy. However, in the 1980s unemployment prevailed and public indebtedness increased substantially. The reputation of fiscal injections suffered immensely. (Beetsma, Giuliodori, 2011,p.1).

A large body of literature has dealt with the usefulness of fiscal stimulus. The results cover a wide range of possible outcomes. The American Recovery and

Reinvestment Act of 2009, arguably the largest fiscal stimulus package in US history, is based on a fiscal multiplier of 1.6 (Romer, Bernstein, 2009,p.12). This means that each dollar spent by the US government will, through the multiplier process, result in 1.60 USD. On the other end Robert Barro argues that "peacetime multipliers are essentially zero" (Barro,2009). In order to fathom the magnitude of this difference consider the following: The Obama administration assumes that the 787 billion USD stimulus "creates 3.5 million jobs" (Romer, Bernstein, 2009,p.6). Barro on the other hand believes that no jobs will be created at all. Needless to say the issue is explosive.

The aim of the present paper is twofold. First of all, it aims at providing theoretical knowledge about Keynes´ multiplier effect. Secondly and most importantly, it addresses the question why estimates of the fiscal multiplier vary so significantly. It is argued that country characteristics are key when estimating the effects of expansive fiscal policy. Thus, two "determinants of the size of the effect on aggregate ouput of an increase in government purchases, or what has been known since Keynes as the government expenditure multiplier"(Woodford,2011,p.1) will be analyzed. The two determinants are monetary policy and trade openness. In doing so, it is outlined that within those characteristics, assumptions about about economic agents´ behavior are of utmost importance. Moreover, the paper aims at providing a relatively objective view on the matter. Therefore, the paper neither evaluates policy nor argues in favor of fiscal intervention in general.

The paper is structured as follows: The first chapter analyzes under which circumstances - in Keynesian theory - fiscal intervention might be desirable. Moreover, the origins of the multiplier effect will be explained, ultimately its functioning will be derived both analytically and verbally. The basic multiplier will then be amplified, which allows for two alternative assumptions, namely income dependent investment and taxes and foreign trade. It will be shown that the actual size of the multiplier depends on key characteristics of a given economy. The second chapter deals with New Keynesian interpretations of the multiplier effect. This is crucial as most of the current research is based on

New Keynesian assumptions. The paper argues that despite its name, New Keynesianism is strongly influenced by neoclassical ideas. Subsequently, the Taylor rule will be described and analyzed since the stance on monetary policy is crucial when estimating the multiplier effect. The subsequent chapter analyzes how different assumptions on monetary policy yield different estimates of the multiplier. The second determinant discussed in this paper is trade openness. It will be argued that open economies, as opposed to closed economies, are likely to suffer from a leakage effect. This is shown on the basis of both empirical studies and theoretical considerations. The last chapter concludes.

II. Keynes theoretical framework

This chapter summarizes the cornerstones of Keynesian theory (respectively Keynes interpretations) while paying special attention to the Income - Expenditure model and the theoretical framework of the multiplier effect.
The following section will not provide detailed insight into the numerous amplifications of Keynes´ theory, but merely focuses on the depiction of general ideas.

II.1) Keynes´ "The General Theory of Employment, Interest ans Money":

Hitherto, the Great Depression is considered the epitome of an economic calamity. In the late 1920s and early 1930 production decreased rapidly, unemployment rates were at a spiraling level and people lived under deplorable conditions (Felderer,Homburg,2005,p.97). Unsurprisingly, the economic system of the time was called into question.

It is in this context that John Maynard Keynes´ main work "The General Theory of Employment, Interest an Money" was published. Keynes´ work challenged the classical-neoclassical doctrin which had been the economic pradigm. "With the publication of The General Theory of Employment, Interest and Money, Keynes marked the beginning of a major mutation of economics

(Beaud, Dostaller,1995,p.3). Unlike often suggested, Keynes did not refute the classical theory entirely. He actually approved of it, under the particular condition of full- employment. Therefore, Keynes himself aimed at explaining situations, in which involuntary unemployment existed (Felderer, Homburg, 2005,p.99). The notion of his understanding is best captured in the famous quote: "The long run is a misleading guide to current affairs.In the long run we are all dead. Economist set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is past the ocean will be flat again"(Keynes,1923,p.80).

Keynes provided a "theoretical justification of interventionism"(Beaud, Dostaller,1995,p.3) and has influenced economic policy throughout the 20th century to an unprecedented extent (Felderer,Homburg,2005,p.98). Keynes´ oevre has countless interpretations, some of which will be dealt with in this paper.

II.2) Consumption Function and Saving Function:

In order to comprehend the Income - Expenditure model and consequently the multiplier effect one must first take a close look at the consumption function, the saving function and investment demand.

Unlike neoclassical thinkers, Keynes implies a stable causal relationship between income (Y) and consumption (C). Analytically expressed this assumption yields:

$$\mathbf{C = C(Y)}$$

Note, in contrast to what the equation suggests, income does not solely determine consumption but is the "only significant and quickly changeable variable" (Felderer, Homburg, 2005, p. 104). The novelty character of Keynes´ view on consumption is best appreciated with respect to the role of interest, which in neoclassical economics plays *the* key role when determining consumption. Albeit Keynes does not entirely refute interest as an "objective factor" (Asimakopulos, 1991, p.59), he still considerably questions its

significance by stating “there are not many people who will alter their way of living because the rate of interest has fallen from 5 to 4 per cent, if their aggregate income is the same as before.“ (Keynes, 1964, p.94.). By contrast, a change in (aggregate) income does alter consumer behavior perceptibly. This conclusion can be derived from “the fundamental psychological law, upon which we are entitled to depend with great confidence both a priori from our knowledge of human nature and from the detailed facts of experience, is that men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their income (Keynes, 1964, p.96.). Following said logic, an increase in income by one unit causes an increase in consumption above zero but below one. Said number (c) is the propensity to consume which is the core element of the Keynesian consumption function. “Keynes [even] uses the two terms, consumption function and the propensity to consume interchangeably, to represent the functional relationship between consumption and income“ (Asimakopulos, 1991, p.59).

Thus, the consumption function in Keynesian theory is:

$$\mathbf{C = C_{aut} + c\,Y}$$

C_{aut}, the autonomous consumption, is not be confused with a minimum income needed to exist but is merely a “statistical illusion“ (Felderer Homburg, 2005, p. 109) which is predetermined by the “linear approach of the consumption function“ (Felderer, Homburg, 2005, p.109). Since the marginal propensity to consume is by definition below one, the remains (1-c = s) are reflected in the saving function :

$$\mathbf{S = (s)\,Y - C_{aut}}$$

II.3) Investment demand:

The consumption function derived under II.1) and the investment demand add up to Keynes` aggregate demand. The latter component is again determined by psychological factors: Future expectations, instead of current conditions as assumed in neoclassical economics, define the marginal efficiency of capital, which thus is "subject to speculation" (Asimakopopous, 1991, p.73). - "it is mainly through this factor (much more than through the rate of interest) that the expectation of the future influences the present" (Asimakopulos, 1991, p. 73). Even though, the investment demand depends negatively on the interest rate, it is the future expectation that is decisive when making the decision of whether to invest into capital goods or to put money in the bank.

$$I = I(\underline{i})$$

Having said this, "the market rate of interest and the (psychological construct of) marginal efficiency of capital converge."(Felderer, Homburg, 2005, p.111) Analytically speaking, the investment demand in Keynesian theory "does not differ from neoclassical economics" (Felderer, Homburg, 2005,p.111), the theoretical implications are , however, very different. Due to the dependence on psychological factors the investment demand is prone to "fluctuate erratically" (Felderer, Homburg, 2005, p.112) even under constant interest rates.

II.3) The Income - Expenditure Model:

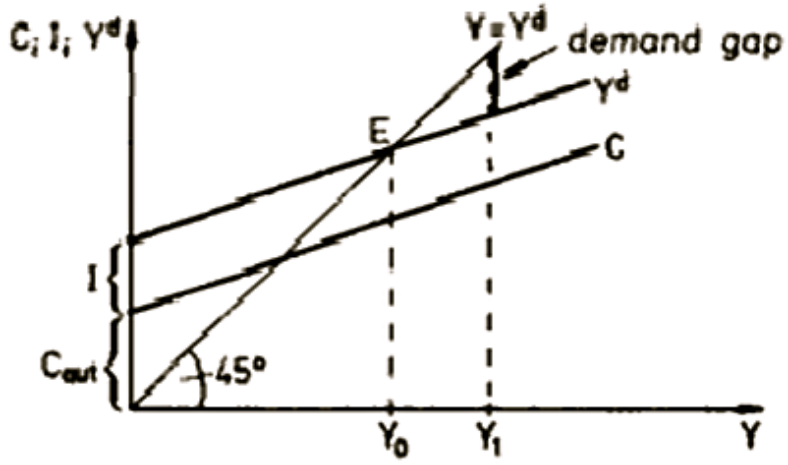


Figure 26
The income-expenditure model

Graph 1: http://thinker.thoth.kr/1922010)

The Income - Expenditure Model depicts the overall (effective) demand (Yd) which is achieved by adding up the consumption function (II.1.) and the investment demand (II.2.).

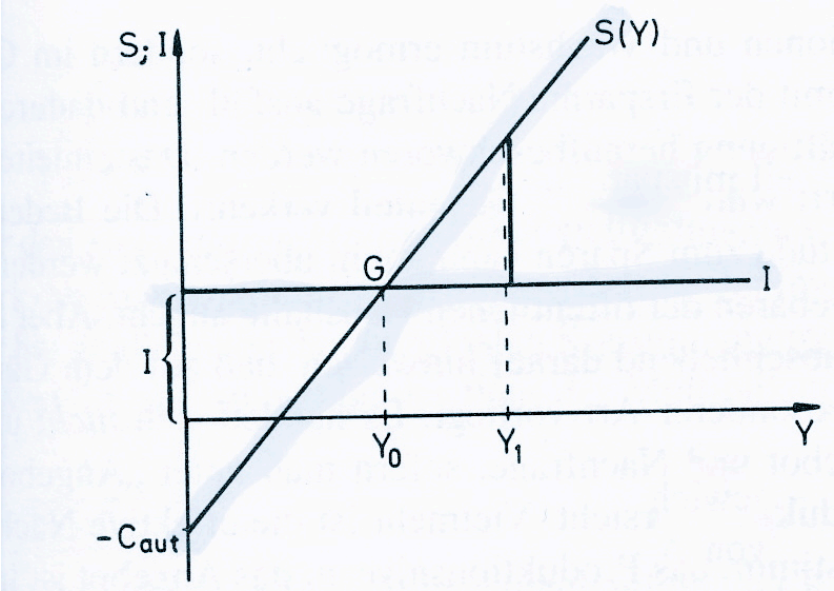
$$\mathbf{Yd = Caut + cY + I}$$

"The model relies on two fundamental assumptions: (1) The volume of investment is given and (2) the economy is not fully using its capacities" (Felderer, Homburg, 2005, p.112). The second assumption draws a pessimistic picture, in which investment does not react to changes in interest rates . The condition $Y = Y_d$ can be derived from Keynes´ understanding of the equilibrium on the merchandise market, according to which equilibrium is met when production and effective demand intersect. This allows for the calculation of the equilibrium income $Y_o = (1/ 1\text{-}c) * (Caut + Iaut)$ [1], of which in Keynes´ theory there is only one. Keynes, therefore disputes Say´s theorem which

[1] Y=C+I=Caut +cY+Iaut
Y−cY=Caut +Iaut
Y0= (1/ 1-c) * (Caut + Iaut)

allows for multiple income equilibria and is of paramount importance in neoclassical economics.

Note, the slope of Y= Yd is one, because the marginal propensity to consume and the marginal propensity to save (1- c = s) always add up to exactly one. The slope of Yd (effective demand) is ,accordingly, less than one, as it only considers the marginal propensity to consume while disregarding the marginal propensity to save. The addition of investment demand to the consumption function is reflected in a parallel upward shift, but does not change the gradient of the linear slope.



Graph 2 source: (Felderer,Homburg,2005,p.115)

Graph 2 depicts the saving function S(Y) and the Investment (I), which is given and therefore horizontal. The demand gap emerges when the “savings exceed the volume of investment“ and the “effective demand falls short of production , because savings are not fully absorbed by investment“ (Felderer, Homburg, 2005, p.115). Also, graph 2 demonstrates what is truly revolutionary not only about the income - expenditure model, but about Keynes´ theory in general. “Saving is no longer considered economically advantageous (...) but in fact

harmful as demand drops out which evokes recession and underemployment.“ (Felderer, Homburg, 2005,p.116).

II.5) The multiplier effect:

The original multiplier idea is often falsely traced back to John Maynard Keynes. The truth is though, that it was first developed by the British economist Richard Kahn who “in his pioneer article on the multiplier, developed the employment multiplier, while Keynes concentrated on the investment multiplier.“ (Asimakopulos, 1991,p.66).Thus far the present portrayal of Keynes´ theory has consciously left out government as an actor. Hence forward, however, the government will be included.

The multiplier effect essentially addresses the question as to how an increase in income is reflected in Keynes` theory. Having said this, it is assumed that an increase in income is induced by an increase in government spending. This is crucial, as the multiplier effect is the theoretical concept, upon which this paper ´s bigger picture - anti-cyclical fiscal policy - relies. Nonetheless, the idea of the multiplier effect will first be explained analytically, before showing its real world applications.

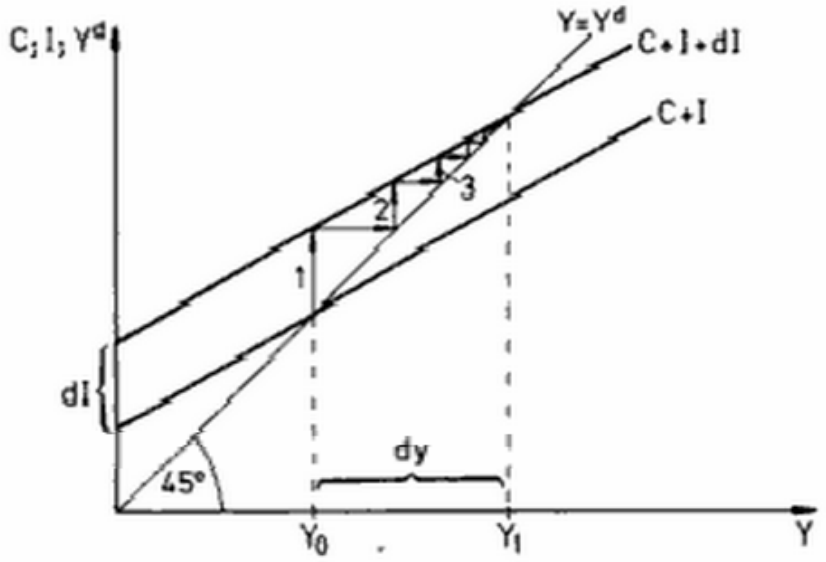


Figure 28
The multiplier process

Graph 3: source: http://thinker.thoth.kr/?document_srl=1922010

In Graph 3 the increase in government spending is reflected in a parallel upward shift of the original effective demand function from (C+I) to a new effective demand function (C +I + dI). The term dI stands for difference in investment and will hence be referred to as G for government spending. Note, the effect would be the same if Iaut or Caut were to rise abruptly.

The actual effect of G is shown by looking at dy, which stands for the difference in income G causes. Undoubtedly, dy is visibly larger than G. This is where the essence of the Keynesian multiplier effect lies: The outcome of an increase in government spending is thought to be larger than the increase itself. The idea behind this claim is a gradual process, which is graphically indicated by the arrows 1, 2 and 3. The amount invested by the government leads to rising demand, since G generates growing income on the supply side and thus stimulates consumption. Then, said increased income itself leads to more consumption and so on. This process is repeated an infinite number times eventually converging to a new equilibrium income Y_0. Consequently, the marginal propensity to consume is yet again the decisive variable in this process. The calculation of the income follows the same rules as before: Thus $Y_0 = (1/ 1-c) * (Caut + Iaut)$ is still valid, but needs to adjusted to the new situation by adding G to the original equation:

$$Y0 = (1/1-c) * (Caut + Iaut + G)$$

The actual multiplier $m = (1/1-c)$ solely depends on the marginal propensity to consume, while G is added to the autonomous quantities Iaut and Caut. In conclusion, the notion of the multiplier is captured adequately in the following definition: “In general, the definition of the fiscal multiplier is the change in real GDP or other measure of output by a one unit increase in a fiscal variable. For example, if a one dollar increase in government consumption in the United States caused a fifty cent increase in U.S. GDP, then the fiscal multiplier is 0.5“ (Ilzetzki et.al.,2011,p.9).

Note, the multiplier theory as described above only applies to government expenditure financed by credit. If G were to be financed by raising taxes there is - according to the Haavelmo theorem - no multiplier effect, “since the rise in income is absorbed entirely by the rise in taxes“ (Dieckheuer, 2003, p.61).

Furthermore, only the simple multiplier has been derived thus far. More realistic scenarios such as foreign trade, income-related taxes, both of which reduce the size of the multiplier, have not yet been included. Having said this, conducting actual calculations using the formula above has very little explanatory power as they would yield unrealistically high multipliers.

An elaboration on the basic multiplier m = (1/1-c) allows for a more realistic approach. This paper will present two possible elaborations.

II.5b)Multiplier effect with income dependet Investment and Tax:

In the first scenario it is assumed that both investment and taxes depend on income. People who earn more pay more taxes and are more likely to invest. When looking at progressive tax systems and investment behavior this seems to be a reasonable assumption. For the formula above this means that both the marginal propensity to invest[2] (bY) and the marginal tax quota[3] (qY) are to be included. Obviously the inclusion of taxes into the formula has an effect on the government´s budget. Beyond the autonomous government spending (G) the government commands a transfer payment (TP) system and receives taxes.[4] The composition of the original formula (multiplier + autonomous quantities) remains the same, only its components change. While the autonomous government spending (G) is the same, the investment function changes from

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[2] I=Iaut+bY
b= dI/dY = marginal propensity to invest

[3] T= Taut + qY
q= marginal tax quota

[4] budget= T-TP-G

I=Iaut to I=Iaut + bY and the consumption function changes from C= cY + Caut to C= Caut + c (Y - Taut - qY + TR).

Said alterations leads to a new aggregate income,

Y* = C+I+G [5] yields

Y*= (1/ (1-c(1-q)-b)) * (Iaut + Caut + cTR-cTaut+G)

Interpreting this formula allows for two conclusions. The fact that investment is considered to depend on income causes a higher multiplier, whereas taxes which depend on income lower the multiplier.

II.5b) Multiplier effect including foreign trade:

In a second scenario the formula will be extended by foreign trade. Furthermore it is assumed that G is entirely financed by credit, the government does not levy taxes. The investment (I= Iaut + bY)still depends on income. The exports of the economy are considered to be autonomous. The imports, however, are considered to depend on income. This assumption brings about a marginal propensity to import[6] (m). The aggregate income is composed as follows: Y*= Caut +Iaut +Gaut + EX - IMaut- mY. The first part of the equation Caut + Iaut+ Gaut symbolizes the domestic absorption, while the second part stands for the balance of trade. The latter can either be positive or negative, depending on an economy´s export/import ratio. The new aggregate income yields the following equation:

Y* = (1/1-c-b+m) * (Caut + Iaut+Gaut+EXaut-IMaut)[7]

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[5] Y = Iaut+bY+Caut+c(Y-Taut-qY+TR)+G
Y-bY-cY+cqY=Iaut+Caut+cTR+-cTaut+G

[6] Imports (dependent on income)= IMaut+ mY
m= dIM/dY= marginal propensity to import

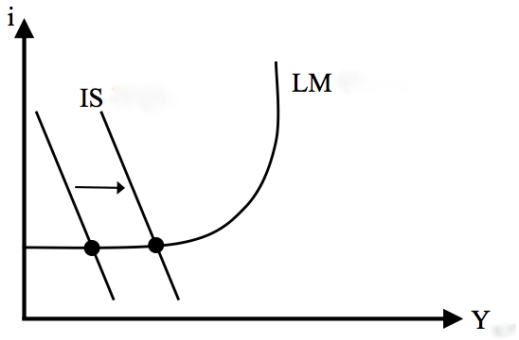
[7] Y=Caut+c+Iaut+bY+Gaut+ EXaut -IMaut-mY
Y-cY-bY+mY=Caut+Iaut+Gaut*EXaut-IMaut

Thus the inclusion of foreign trade in the formula allows the following conclusion. The higher the marginal propensity to import, the lower the multiplier effect.
These elaborations of the basic multiplier emphasize that the actual size of the multiplier crucially depends on country characteristics.

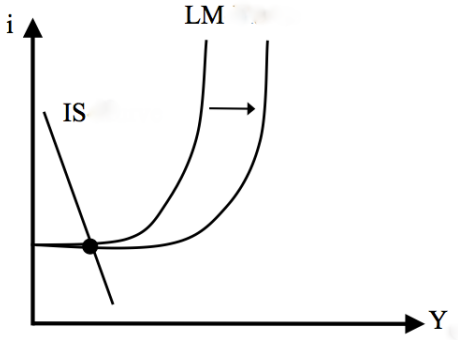
Nonetheless, the above assumes that government intervention may be useful as markets are imperfect. The following section will provide further detail as to under which circumstances fiscal policy is considered beneficial in Keynesian theory.

II.6) IS-LM Model:

The financial crisis has definitely fueled the ongoing discussion about the usefulness of fiscal policy as a remedy to overcome economic recessions: "Interest in fiscal stimulus as an option has been greatly increased by the fact that in many countries by the end of 2008, the short term nominal interest rate used as the main operating target for monetary policy had reached zero - so that further interest rate cuts were no longer available to stave off spiraling unemployment and fears of economic collapse" (Woodford, 2010, p.1). The IS-LM model allows for an analysis of the situation Woodford outlines ; circumstances under which the means of monetary policy are exhausted.
The IS- LM model was developed by John R.Hicks and is considered "the groundwork of the prevailing Keynes interpretations after World War II" (Heine,Herr, 2003, p. 25). Later on it was integrated into neoclassical economics, which "paved the way away from Keynes" (Heine,Herr,2003,p.26). Eventually the model was integrated into the neoclassical synthesis. Following Keynes´footsteps, "Hicks assumes both fixed prices and wages" (Heine, Herr, 2003,p.25).



Graph 4



Graph 5

graphs 4 and 5: source: http://www.wiwi.uni-muenster.de/insiwo/studieren/vorl/Makro/folien/pdf/5.5-Keynes-ISLM-Diagramm.pdf

The model combines the IS- curve, whose components are the saving function S= S(Y) and the investment function I= I(i) and the LM- curve which is "the Keynesian description of the money market replacing the quantity theory of money" (Felderer, Homburg,2005,p.120). "The IS curve is the locus of all combinations of real income and interest, which creates a balance of demand and supply on the capital market" (Felderer, Homburg, 2005,p. 129). The ratio of the model can be summarized as follows: " At a given price level both real income and employment are determined through effective demand" (Felderer,Homburg,2005,p.131).

An in depth interpretation of the IS-LM model would go beyond the scope of this paper, therefore, an interpretation of graph four and five shall suffice.

In graph four the LM (liquidity = money supply) curve and the IS curve intersect in the Keynesian[8] area of the LM curve - the area in which the LM curve is fully interest-elastic . It is assumed that the rightward shift of the IS curve is induced by an increase in government expenditure within the framework of a country´s fiscal policy. This increase leads to more aggregate income, whereas the interest rate remains the same. By contrast, if the country ´s policy had been to increase the money supply it would have let to a

[8] The LM curve can be viewed as three separate curves. The"normal area" of the LM curve refers to the area in which the gradient is neither zero nor infinite.
The area in which the curve is not interest elastic (= infinite slope) at all is considered the classical area.

rightward shift of the LM curve. Graph 5 shows that both interest rate and aggregate income remain equal, hence monetary policy is rendered futile.

What has hitherto been described seems to suggest simple solutions about what to do in an economic recession. Unfortunately, the answer is not that easy. Otherwise economists would not have been argueing about this very problem for almost a century. For this reason some clarifying remarks are to be made at this point. First of all, everything that has been described and analyzed thus far is to be understood as merely a theoretical consideration. If this paper had looked at neoclassical economics for instance the mere existence of a multiplier process would have been rejected. But even under the assumption that a multiplier process takes place, the real world applications discussed further on will show that among scholars assumptions, results and ultimately the evaluation of policy instruments vary greatly. “For Keynes,[as for other authors] the links between economic theory and economic policy are very complex. It is too simple to consider an economic policy as resulting automatically from a particular theory.“ (Beaud, Dostaller,1995,p.43) With that being said, the main purpose of this section is to shed light upon the theoretical groundwork of a large share of contemporary fiscal policy research.

III. New Keynesian theory:

The better part of current research (e.g.: Woodford (2010), Christiano et.al. (2009), Nakamura (2011)), Cogan et.al. (2009)) on the fiscal multiplier is based on New Keynesian economics. This section aims at bridging old Keynesian ideas and New Keynesian economics. However, a critical assessment of New Keynesian economics is “particularly difficult, since there is no such thing as *the* New Keynesians.“ (Heine, Herr,2003,p.23). The following ,therefore, first briefly outlines the development of New Keynesian economics and in a second step identifies the theory´s central concepts.

III.1) Origins of New Keynesian theory:

In a larger theoretical context New Keynesian theory can be interpreted as an theoretical answer to new-classical economics (Beaud, Dostaller,1995,p.134). The latter had superseded both Friedman´s monetarism as well as the neoclassical synthesis (Heine,Herr, 2003,p.36) and eventually came to be the dominant economic paradigm in the 1970s.

The assumption of rational expectations among all economic agents replaced the idea of adaptive expectations and was incorporated into macroeconomic models (Heine, Herr, 2003,p.35). At first glance this alteration might seem innocuous. Far from it! It essentially renders any intervention with regards to both monetary policy and fiscal policy useless, for an increase of the money supply by a central bank is immediately reflected in peoples´ expectations and thus instantaneously leads to a new equilibrium price level (Heine, Herr, 2003,p.24). While fiscal policy had been rejected before, the complete repudiation of any form of monetary policy epitomizes the novelty character of new-classical economics.

In conclusion, the only sensible policy recommendation obeying the assumptions of new-classical economics is for the government to stay out of it. This "also applies in economic recessions and times of restrictive monetary policy" (Heine, Herr, 2003,p.36). Unsurprisingly the new classical school of thought faced strong criticism, the most prominent of which is known as New Keynesian economics whose features will be outlined subsequently.

III.2) Features of New Keynesian economics:

This section mainly emphasizes those aspects of New Keynesian theory which have direct effect on current research on the fiscal multiplier. Moreover, it will be addressed in how far New Keynesian economics differ from Keynes ´original theory.

New Keynesian economics first emerged in the 1980s. Much like its precursor Neokeynesian economics (Felderer, Homburg,2005,p.337) it seeks to "explain the rigidity of prices, wages and interest rates" (Beaud, Dostaller,1995,p.135). The key questions addressed by New Keynesians lie in identifying "those factors which impede the functioning of the neoclassical standard model"(Heine, Herr,p.36).

Hence, one of the core features of New Keynesian economics is its - undoubtedly - neoclassical foundation. It largely accepts the neoclassical assumption that, "economies subjected to market forces will under fully flexible prices and wages immediately attain a full employment equilibrium" (Heine, Herr,p.36). Keynes` theory on the other hand, shows that an under-employment equilibrium may exist even if prices are fully flexible. "According to Keynes, the wage level determines the price level not the level of employment. He ,therefore, unmistakeably emphasized the stabilizing function of fixed wages" (Heine, Herr, 2003,p.47). By implying that rigidities cause imperfect markets the theoretical gap between old Keynesian and new Keynesian ideas becomes abundantly clear.

Moreover, New Keynesians frequently claim that "frictions in the price flexibility may stem from the rational or near rational behavior of firms." (Beaud, Dostaller,1995,p.135). That combined with the "monopolistic nature of contemporary economics causes involuntary unemployment" (Weitzmann, 1982, p. 790). Again frictions in flexibility are viewed negatively. More importantly though, New Keynesians largely accept the rational expectation hypothesis, which stems from the neoclassical school. The plurality, with which economic policies are viewed ,however, suggest that " as a rule there is no such thing as objectively correct knowledge" (Heine,Herr,2003,p.48). It is ignored that expectations usually carry an uncertainty element, which consequently is eliminated from New Keynesian analysis. By contrast, in Keyne´s theory uncertainty is of paramount importance. With respect to the Investment demand (see, I.2) uncertainty towards future plays the crucial role, when determining how money is invested.

As H.P. Minsky put it aptly "Keynes without uncertainty is something like Hamlet without the prince" (Minsky,1975,p.57). The view with which one looks at peoples behavior decisively determines the outcomes of contemporary research on the fiscal multiplier. With respect to the American Recovery and Reinvestment Act for instance models assuming rational expectations yield a multiplier that is significantly lower than models which do not assume rational expectations (Cogan, 2009, p.4). This will be elaborated on in the subsequent sections.

The above accentuates only very few concepts of New Keynesian thinkers. Nonetheless it is shown that New Keynesianism differs substantially from Keynes´original ideas. Also, the above can be interpreted as a presentation of the current macroeconomic mainstream.

In his article "Convergence in Macroeconomics: Elements of the New Synthesis" (2009), Michael Woodford argues that there has been convergence of views on macroeconomics. He supports his argument by stating that "the two schools [monetarists and Neo-Keynesians in the 60s and 70s] had different conceptions of economics, and as a consequence, frequently argued against one another."(Woodford,2009,p.267) In the past 10 to 15 years, however, "there are no longer such fundamental disagreements among leading macroeconomists about what kind of questions one might reasonably seek to answer" (Woodford, 2009,p. 268). As mentioned earlier most of the current research on the fiscal multiplier uses New Keynesian models. This new mainstream can be summarized as follows: "In important respects, such models remain direct descendents of the Keynesian macro-econometric models of the early postwar period, though an important part of their DNA comes from neoclassical growth models as well" (Woodford,2009,p. 269).

III.3) The Taylor rule:

One of the most influential contributions of New Keynesian economics is the Taylor rule which provides for a guideline towards monetary policy. Said rule is applied frequently in current research on the fiscal multiplier (see e.g.:Cogan

et.al. (2009), Nakamura (2011), Woodford (2010), Christiano et.al (2009) and therefore presented in greater detail. Furthermore, large central banks such as the ECB and the FED- although not explicitly declared- follow the Taylor rule. The Taylor rule can be considered a reaction to monetarism which suggested a steady increase of money supply (Heine, Herr,2003,p.45). Nowadays, the stabilization of the stock of money, "according to the long term growth rate of the real national product" (Beaud, Dostaller,1995,p.116) is largely refuted. This is due to several reasons; the most profound of which are the unexpectedly high instability in economic agents´ portfolio-behavior on the one hand and the increasing complexity of financial instruments on the other hand (Heine, Herr,2003,p.45).

Having said this, John Taylor developed a rule which aims at stabilizing monetary policy in a world which is exposed to continuous shocks, as presumed by New Keynesian economics (Heine, Herr,2003,p.45). Taylor did so by capturing the behavior of the FED in a formula and in a second step suggested that hence forward ,in order to provide monetary stability, central banks ought to follow said rule. (Heine, Herr, 2008,p.150). When following a Taylor rule the interest rates are set in accordance with:

$$i_{taylor} = i_{real} + \pi + a(\pi - \pi^*) + b(y - y^*) + \varepsilon$$

i_{taylor} is the the central bank´s interest rate, hence its policy instrument (Woodford,2010,p.16). The long-dated real interest rate is $i_{real\ (target\ value)}$. π is the current inflation rate and π^* is the target inflation rate. Y stands for the current GDP and y* symbolizes the economy´s production potential. The subtractions of the actual and the expected inflation rate (actual GDP - production potential, respectively) depict the inflation gap and the production gap, respectively (Jarchow, 2003, p.347). Both a and b are merely coefficients "indicating to which extent the central bank estimates deviations of both GDP and inflation rate with regards to monetary policy" (Heine, Herr,2008,p.150).

Taylor himself sets both deviations at 0.5, meaning that they are both weighted equally[9] (Jarchow, 2003,p.347).

The functioning of the Taylor rule is pretty straight forward, an example:
Assumed that the actual inflation rate is above the target value is ($\pi > \pi^*$), the central bank ought to increase the nominal interest rate i_{taylor} above i_{real}. This measure slows down the economy, which means that the unemployment rate increases. Said increase in unemployment does , however, slow down the inflation rate. The coefficient a reflects how the central bank deals with the trade off between increasing unemployment on the one hand and the desired slow down of the inflation rate. If a is estimated at a relatively high level, the central bank prioritizes the slow down of the inflation rate over the increasing unemployment rate. (Blanchard, 2006,p.544)

In a nutshell, the Taylor rule describes the reaction of a short term controllable[10] interest rate to deviations of the actual inflation rate and the expected inflation rate as well as the actual and the expected GDP (Jarchow, 2003,p.346).
The Taylor rule allows for two interpretations (Jarchow, 2003,p.346) . Firstly the descriptive interpretation, meaning that the Taylor rule adequately describes the behavior of the central bank. Normatively speaking, the Taylor rule sets out rules for the central bank; the compliance of which implies that the stabilization of both the inflation rate and GDP towards a certain level, are considered goals of monetary policy (Jarchow,2003,p.347). There are various types of the Taylor rule (only one of which is discussed in this paper). They differ ,however, very little with respect to their fundamental information.

Both the scientific community as well as central banks appreciate that the monetary policy suggested by the Taylor rule goes beyond the sole consideration of price level stability, by taking into account cyclical conditions (Heine, herr,2008,p.153). Nonetheless, critics point out that “many other

[9] for the given formula this means: a=0,5 and b=0,5

[10] controllable by the central bank

events, such as an exchange rate crisis, or the need to change the composition of spending on goods, and thus the mix of monetary and fiscal policy, justify changing the nominal interest for reasons other than those included in the rule“ (Blanchard,2006,p.545). Over the past 15-20 years, though, the Taylor rule has adequately described the behavior of both the German Bundesbank and the FED (Blanchard,2006,p.545). For this very reason the Taylor rule is frequently applied in estimating the fiscal multiplier. On the other hand, the incapability of the rule to react to unforeseeable events suggest that officially implementing the rule ought to be dismissed (Blanchard, 2006,p. 545). Having said this, it is suggested to use the Taylor rule as an indicator rather than a incontrovertible entity (Heine, Herr,2008,p.153).

IV.Current research on the fiscal multiplier:

Thus far this paper has presented the theoretical groundwork of the fiscal multiplier in a rather fragmentary manner. Since a detailed analysis of both Keynesian theory as well as more contemporary approaches to the multiplier effect would go beyond the scope of this paper a brief review is in order.

Following a theoretical build up, the logic of the fiscal multiplier was described in the first chapter. The essential idea is that a dollar - or any other currency for that matter - spent by the government under certain conditions results in more than one dollar of output. In order to deepen the understanding of the multiplier process they paper presented two alternatives which suggest that the size of the multiplier depends on specific features of a given economy. In conclusion though an increase in government spending is considered a legitimate answer to an economic recession, according to Keynes´ theory. The use of fiscal intervention is especially intriguing when the means of monetary policy are exhausted. Chapter three aims at providing a bridge between Keynesian ideas and New Keynesian economics. The latter plays a predominant role in the current research. The detailed description of the Taylor rule is important as the view on monetary policy has a significant influence on the estimate of the multiplier. The same applies to the assumption of rational expectations. Tying

in with said arguments, this section eventually analyzes current research on the effectiveness of government expenditure.

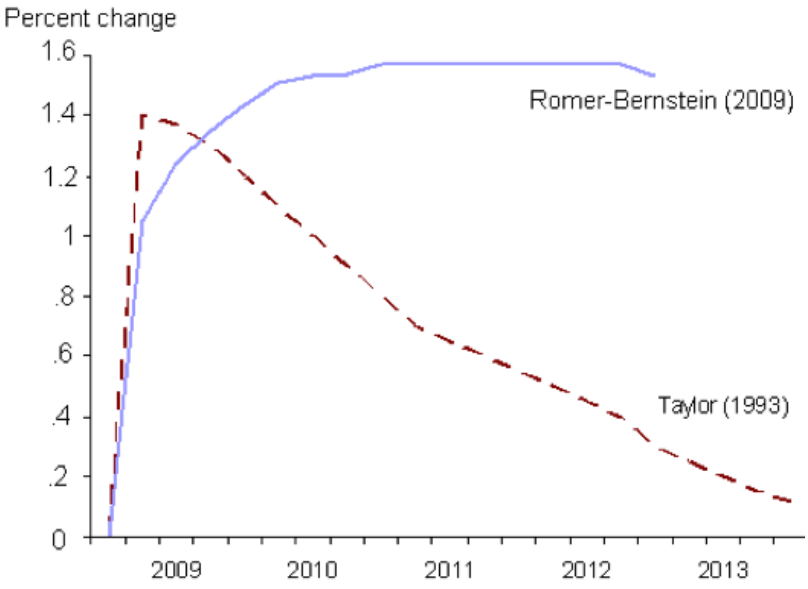
In their IMF working paper "How Big (Small) are Fiscal Multipliers" (2011), Mendoza et.al. conclude that the size of the multiplier "crucially depends on key country characteristics" (Mendoza et.al.,2011,p.1). The authors find that "the level of development, exchange rate regime and openness to trade" (Mendoza et.al.,2011,p.1) play a significant role in determining the size of the multiplier. This paper will take a closer look at two factors; trade openness and monetary policy.

IV.1) The fundamental role of monetary policy:

As aforementioned a large body of literature argues that monetary policy has a significant impact on the size of the multiplier (see, e.g.Nakamura et.al.(2011), Cogan et.al, Woodford (2010)). It is argued that fiscal stimulus is most effective at the zero interest- rate lower bound (see, e.g. Woodford (2010), Ilzetzki et.al.(2011)). This notion is based on the following: As output rises the Central bank would usually increase interest rates. In an economic recession, however, the Central bank might choose to accommodate the zero lower bound for some time and thus further exploit rising output (Cogan et.al.,2010,p.16). Christiano et al.(2009, p.1) suggest that fiscal multipliers can be much larger than usual under these circumstances. This mechanism was considered pivotal when estimating the effect of the American Recovery and Reinvestment Act in 2009.

As a consequence of the financial crisis in 2008, employment in the United States was "declining at a rate of more than half a million jobs per month, and credit markets were stretched almost to the breaking point"(Council of Economic Advisors, 2009,p.1). At the same time the FED had almost reached the zero lower bound; thus a decrease of interest rates was no longer an option. The necessity to act was, however, greater than ever.

Upon this context, shortly after his inauguration, President Obama "signed into law the American Recovery and Reinvestment Act"[11](Council of Economic Advisors, 2009,p.1). The ARRA is arguably the biggest economic stimulus package in American history and all in all pushes 787 billion US-Dollar in the economy. Christina Romer and Jared Bernstein drafted the ARRA and their estimates let them to assume that the impact of the stimulus package would yield a multiplier of 1,6 (Romer,Bernstein,2009,p.12). The multiplier effects estimated by Romer et.al are based on the assumption "that the funds rate is likely to be at or near its lower bound of zero for the foreseeable future"(Romer,Bernstein,2009,p.11).These assumptions were put to a test by Cogan et.al. in 2009. The authors argue that the uncertainty about the quantitative effects of fiscal policy can be attributed to diverging opinions on the appropriate theoretical framework and methodology and ,therefore, conclude that "robustness[12] is a crucial criterion in policy evaluation" (Cogan et.al.,2009,p.3).



Graph 6: Cogan et.al.(2010), p.3.

Graph 6 shows how different assumptions can yield entirely different outcomes. Having said this, Cogan et.al. alter the assumptions by Romer and

[11] hence forward referred to as ARRA

[12] "Robustness requieres evaluating policies using other empirically -estimated and tested macroeconomic models"(Cogan et.al.,2009,p.3)

Bernstein, who according to Cogan et.al. use an old Keynesian model[13]. Instead they use a New-Keynesian model and stress "the term New Keynesian is used to indicate that the models have forward looking, or rational, expectations by individuals and firms, and some from of price rigidity, usually staggered price or wage setting" (Cogan et.al.,2009,p.4).

Romer and Bernstein base their estimates on an pegged interest rate at the near zero lower bound, thus their assumption defies the Taylor rule as well as any other monetary policy assumption in New Keynesian models. According to Cogan et.al. "a pure interest rate peg is prohibited in New Keynesian models with forward looking households and firms because it produces calamitous economic consequences" (Cogan et.al.,2009,p.5).

Since the interest rate mechanism is unhinged, both households and firms expect spiraling inflation. Furthermore, an increase in future taxes, and consequently lower after tax incomes, is expected as the increased government spending will have to be paid off by taxes (Cogan et.al.,2009,p.7). An alternative assumption about the stance on monetary policy ,accordingly yields a significantly lower fiscal multliplier than assumed by Romer and Bernstein. In a situation in which the interest rate is pegged at zero until the end of 2009 and starts to be more responsive in 2010 the multiplier effect decreases drastically over time (Cogan et.al.,2009,p.8). Even if the interest rate is held zero for yet another year, meaning throughout 2010, the multiplier effect is larger than in the previous example, but still substantially below Romer´s and Bernstein´s findings. Cogan et.al explain their differing results by the so called crowding out effect. The crowding out effect essentially claims that increased government expenditure squeezes private investment out of the market (Felderer, Homburg,2005,p.167). When recalling the Investment demand function depicted in the first chapter of this paper, it becomes evident that the slope of the investment demand curve I= (i) reveals the interest elasticity of the investment demand. In both monetarism and New Keynesian models with rational expectations this elasticity is assumed to be fairly large. In Old

[13] old Keynesian in this case means without rational expectations.

Keynesian economics (e.g. the Romer, Bernstein assumptions) the elasticity of the investment demand is considered to be very low. Having said this, in New Keynesian model - as the one used by Cogan et.al in their alternative assesment of the ARRA - "consumers will anticipate future tax burdens and save rather than spend, while government borrowing will drive up interest rates and crowd out private investment" (Wieland,2010,p.5).

In "Simple Analytics of the Government Expenditure Multiplier (2011)", Michael Woodford argues similar to Cogan et.al. that "under more realistic assumptions about monetary policy under normal circumstances,the multiplier will be less than one" (Woodford,2011,p.2). Woodford´s definition of a realistic approach to fiscal policy is a Taylor rule (Woodford,2011,p.16). But more importantly Woodford emphasizes that "under specific circumstances, it can be highly desirable to stimulate aggregate demand by increasing the level of government purchases (Woodford,2011,p.22). Specific circumstances refer to times in which financial intermediation is substantially disrupted - "tempestuous seasons" (Keynes,1923,p.80) so to speak. These conditions may cause monetary policy at the zero lower bound - even if a Taylor rule is assumed. Consequently, Woodford concludes that even if a Taylor rule is applied the multiplier can be substantially larger than one, thus contradicting the findings of Cogan et.al.

According to Woodford the zero lower bound as a binding constraint is due to two diverging interest rates (r1 and r2). The latter is the central bank´s rate while the first one is the "interest rate for the intertemporal allocation of expenditure"(Woodford,2011,p.19). Said divergence is caused by financial disruptions in the financial sector, the magnitude of which determines the size of the spread between r1 and r2. Having said this, under normal conditions r1 and r2 are assumed to be equal. Furthermore, suppose that monetary policy is governed by a Taylor rule, "except that the interest target rate is set to zero if the linear rule would call for a negative rate" (Woodford,2011,p.20).

Woodford finds the zero lower bound holds - even under a Taylor rule for as long as "credit spreads remain elevated" (Woodford,2011,p.22) for a range (G to $G_{critical}$) of possible government expenditures. This is the case, because under these (crisis-) conditions there will be a negative output gap[14]. Having said this, any dollar spent by the government up to the level of $G_{critical}$ is said to benefit from the multiplier effect, made possible by the binding zero lower bound. When interest rates are at the zero bound fiscal stimulus appears to be a feasible instrument to extenuate the effects of a crisis, in which "the constraint of the zero lower bound would otherwise be most crippling"(Woodford,2011,p.25). Government expenditure in excess of $G_{critical}$ sets off the interest rate mechanism of the Taylor rule, which is rendered paralyzed up until $G_{critial}$, leading to a gradually decreasing multiplier effect[15] (Woodford,2011,p.16-26).

The above raises the question as to why the findings of Cogan et. al. differ from what Woodford suggests. According to Woodford the crux of the matter lies in time frame considered by Cogan et.al., and not as one might expect in different underlying assumptions. Woodford´s findings, in line with other authors (e.g.: Eggertsson, 2009)), assume that increases in government purchases last exactly as long as there are credit spreads and consequently a binding zero lower bound. By contrast, Cogan et.al "consider increases in government that are initiated at a time when interest rates are zero, but that extend much longer than the period over which the interest rate is assumed to remain at zero" (Woodford,2011,p.27). Both authors agree that when the Taylor rule yields increasing interest rates crowding out takes place, and the multiplier effect decreases rapidly.

The crowding - out assumption is refuted by Romer and Bernstein. They claim that increased government purchases, in fact, lead to crowding in private investment (Romer, Bernstein,2009,p.12). Suggesting a multiplier above one

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[14] negative output gap means "output below its level with flexible prices and wages" (Woodford,2011,p.22).

[15] For further information see: Woodford, Michael: Simple Analytics of the Government Expenditure Multiplier (2011).

essentially assumes a crowding - in effect on the grounds that fiscal stimulus triggers private investment to rise. Suppose a multiplier is estimated at 1.6 meaning that an increase in government spending by one leads to an increase in output by 1.6. The subtraction of the government expenditure renders remains of 0.6 which are allotted to increasing private investment (Felderer,Homburg, 2005,p.171).

In the works by Woodford and Cogan et.al. the crowding out effect is set off by increasing interest rates when monetary policy is responsive thus leaves the zero lower bound. As graph 6 shows the Romer, Bernstein estimates are said to have a much longer effect. Apart from the assumption that monetary policy remains unresponsive for a prolongued period of time, there is yet another key variable influencing their results. As aforementioned the model used in the ARRA presumes a much lower elasticity of investment demand, hence the effects of a responsive monetary policy are much less drastic.

In conclusion, a pegged interest rate at the near zero lower bound carries problems of its own (e.g. inflation)[16], however, the fiscal stimulus is most successful when the nominal interest rate is held constant near zero. If monetary policy is responsive, the interest rate will increase, and ultimately the view on the interest elasticity of the investment demand determines the success or failure of fiscal stimulus. Moreover, it has been shown that the stance on monetary policy is intrinsically tied to assumptions about economic agents´ expectations and behavior.

IV.2) Trade openness:

Trade openness is the second factor - explored in this paper - which significantly determines the size of the multiplier effect. In section I.5 the multiplier effect was derived both graphically and analytically. The basic multiplier was then subjected to two alternative assumptions, one of which was foreign trade. It was found that the marginal propensity to import downsizes

[16] An elaborated analysis of these problems would go beyond the scope of this paper.

the magnitude of the multiplier effect. Much like savings or taxes, imports do not represent spending on domestic output. This finding is known as leakage.

By virtue of this theoretical background it is crucial that the openness of a respective economy be considered when estimating the effects of increased government purchases. Moreover, the reducing force of imports on the multiplier effect epitomizes much of the critique, to which the Keynesian multiplier effect is exposed. It is often argued that, "Keynes might have had some relevance for the developed economies of the mid-20th century that were enmeshed in the Great depression, but Keynes has little or nothing to offer to the open economies of a globalized economic system of the 21st century" (Davidson,2009,p.68). The explanatory power of Keynesian theory will not be discussed in detail. However, it ought to be recognized that Keynes was fully aware of the possibility that "trade could modify the magnitude of the domestic employment multiplier" (Keynes,1964, p.120).

The following sheds light upon research that has taken trade opennes into consideration. Both studies discussed below are based on empirical data of different countries. In that respect they differ from the rather theoretical considerations presented in this paper´s section on the role of monetary policy. While the fact that both studies rely on existing data seems to deliver objective results, it will be shown that much like in the theoretical considerations, assumptions are crucial and ultimately influence findings. In general the empirical studies on the matter are afflicted with one major problem which is the identification of fiscal shocks. "Changes in Government spending are rarely exogenous" (Nakamura,2011,p.1). Therefore, depending on the estimation approach a wide range of estimates is possible. Both studies discussed above are so called time series studies, meaning that they observe an economy over time and estimate the response of GDP to fiscal policy on the basis of their observations. This kind of research bears immense risks, as its prone to reverse causation. It is difficult to draw a sharp line between the identification of "innovations in government spending, as distinct from variations that are systematically related to the business cycle" (Corsetti et.al.,2011,p.1).

In accordance with the theoretical framework, all empirical studies conclude that fiscal policy in open economies is less effective due to the leakage effect (see, eg.:Beetsma,Giuliodori (2011), Nakamura et al.(2011), Ilzetzki et al. (2011), Corsetti et al.(2011)).

In their IMF working paper "How Big (Small) are Fiscal Multipliers? (2011) Ilzetki et.al. do justice to the widely accepted cognizance that "there is no such thing as the multiplier" (Müller et al.,2010,p.2). The authors explore the effects of government expenditure on the basis of a dataset involving 44 countries. Trade openness is considered a vital factor. They use the "ratio of trade (imports plus exports) to GDP" (Ilzetzki et al.,2011,p.20) as a classification criterion, enabling them to distinguish between open and closed economies. A threshold of 60% is applied; meaning that economies in which exports plus imports exceed 60% of the overall GDP are classified as open[17], respectively those below 60% as closed[18]. The find substantially larger multipliers in closed economies (Ilzetzki et al,2011,p. 21). If the distinction between open and closed economies is drawn upon "legal restrictions to trade"(Ilzetzki et al, 2011,p.21) such as tariffs the results are very similar. Countries with high trade[19] barriers are far more likely to profit from expansive fiscal policies as opposed to countries with low tariffs. In fact, the authors find negative multipliers for either definition of open economy (Ilzetzki et al.,2011,p.21).
This is particularly interesting as their first classification criterion does not differ between imports and exports but merely concentrates on the volume of trade as a whole. The authors, however, argue that their findings are consistent with the formula for the open economy multiplier[20] (Ilzetzki et al, 2011,p.22).:

Y* = (1/1-c-b+m) * (Caut + Iaut+Gaut+EXaut-IMaut)

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[17] Examples for open economies: Belgium, Netherlands, UK, Sweden (Ilzetzki et.al 2011,p.65).

[18] Examples for closed economies: USA, Brazil, France, Spain, Canada, Australia (Ilzetzki et.al.,2011,p.65).

[19] The threshold is defined at 4% as weighted mean of tariffs on all products (Ilzetzki et al.,2011,p.65)

[20] For further explaination see II.5b) of this paper.

In the formula above the marginal propensity to import is what diminishes the multiplier effect. Having said this, the exports which also account for the overall trade volume - one might think - do not have an effect on the size of the multiplier.

Exports do, however, have significant impact on the multiplier process as they essentially discontinue the multiplier process. Suppose that in a recession a company receives money from the government in order to recover and most importantly save jobs. Subsequently said company´s production increases and employment rises. Thus far the government´s money serves the purpose. Further assume that the company produces intermediate goods, the increased amount of which cannot be absorbed entirely by domestic companies that produce the final goods. Consequently, a significant amount of goods is exported to companies beyond the respective country´s borders. This example demonstrates that exports do in fact matter, as they might hinder the government´s money from actually multiplying (Ilzetzkiet al.,2011,p.22); thus supporting the fact that fiscal policy might be more effective in closed economies as opposed to open economies. Moreover, the example allows for two conclusions. Firstly, government spending is more effective in countries that have a large internal markets (Blanchard,2006,p.417). Secondly, governments need to carefully look at the specifications of different industries. With regards to the latter conclusion, the government´s strategy ought to take aspects into account that go far beyond mere economic considerations. For instance, Christina Romer and Jared Bernstein were harshly critisized for disregarding gender when drafting the ARRA. A large part of the money is supposed to flow into the building sector, an industry which predominantly creates jobs for male workers. Having said this, policy makers also need to include socio-economic aspects when drafting fiscal policy solutions.

The assumption that fiscal policy is more successful in countries with a large internal market is mostly echoed by the scientific community (see.,eg. Beetsma,Giuliodori,2011,p.26). In their study about fiscal multipliers in the

European Union, Beetsma and Giuliodori use data from 14 different EU countries. Much like in the previous study they use the volume of trade as an indicator of a country´s trade openness. The seven countries with relatively low trade volumes are considered closed economies[21], whereas those in the upper half of the sample are considered open economies[22]. They measure the responses "to a 1% of GDP government purchases shock" (Beetsma,Giuliodori, 2011,p.26) and find that the multiplier effects are different both upon impact[23] and after one year[24] of the fiscal shock. Moreover, the authors find evidence that "fiscal expansions in large EU economies have non-negligible effects on their main trading partners" (Beetsma,Giuliodori,2011,p.23).

The classification criterion determining whether an economy is considered closed or open is the same in both studies (volume of trade). Nonetheless, there threshold is different. While Ilzetzki et al. use the number of 60%, Beetsma et al. compare the studied countries to one another and then simply half their sample. The UK is considered an open economy in the first study. Beetsma et al. ,on the other hand classify the UK as a closed economy. There is agreement between the studies with regards to the rest of the countries. In an overstated fashion though, the two studies lead to different conclusions about the appropriate policy for the UK.

All in all it has been confirmed that trade openness due to the leakage effect does have significant impact on the size of the multiplier. Also, it has been shown that countries with a large internal market are more likely to unfold the multiplier effect of increased government expenditure. The empirical results in contemporary studies confirm what the theory implies. Nonetheless, the example of the UK shows that assumptions do matter and results do differ.

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[21] Closed economies are: Finland,France, Germany, UK, Italy, Greece, Spain (Beetsma,Giuliodori,2011,p.18).

[22] Open economies are: Austria, Belgium,Denmark,Ireland,The Netherlands,Portugal, Sweden (Beetsma,Giuliodori,2011,p.18).

[23] Impact = 0,79 for open economies and 1,39 for closed economies (Beetsma, Giuliodori,2011,p.18).

[24] After one year = 0,88 for open economies and 1,57 for closed economies (Beetsma,Giuolidori,2011,p.18).

Therefore, the results are probably best appreciated as a general indicator, rather than specific numbers. With that in mind, the Beetsma et al. study "The Effects of Government Purchases Shocks: Review and Estimates for the EU" does not give specific policy advice to governments but carefully suggests a "concerted fiscal expansion in the five largest EU countries"(Beestma,Giuliodori,2011,p.28).

V.Conclusion:

The paper first provided an in depth analysis of the implications of Keynes´ theory. In doing so, special attention was paid to the Keynesian multiplier effect which was depicted both analytically and verbally. Furthermore, the paper looked at two amplifications of the basic multiplier, thus not only allowing for a more realistic approach to contemporary economies, but also indicating that country characteristics are key when estimating the effect of expansive fiscal policy. It was found that trade, income dependent taxes and investment affect the size of the multiplier. The first two factors decrease the multiplier while the income dependent investment increases the multiplier. Subsequently, it was outlined under which economic circumstances fiscal expansion is considered desirable in Keynesian economics. In simple terms, this is the case when the economy is in a recession or in a crisis. With regards to the current debate - meaning what followed the global financial crisis in 2008- it was argued that the inability of monetary policy to solve the crisis has significantly contributed to the renewed interest in fiscal stimulus.

In chapter III. New Keynesian economics were presented. The paper argued that crucial assumptions such as rational expectations stem from neo-classical economics and were integrated into New Keynesian economics. Thus, it was shown that New Keynesian economics differ substiantially from Keynesian economics, from which the multiplier effect was derived. Beyond that, it was found that current research on the fiscal multiplier is predominantly based on New Keynesian economics. However, it was made clear that despite its role in

current research there are alternatives to New Keynesian economics such as the model used by Romer and Bernstein in the ARRA.

Throughout the present paper was highlighted that “there is no such thing as the fiscal multiplier“(Müller et.al.,2009,p.). A number of key factors were mentioned, two were assessed in greater detail: Trade openness and Monetary policy. The latter is crucial when estimating the effectiveness of expansive fiscal policy. It is largely aggreed upon that when the nominal interest rate is fixed at a level near zero, fiscal stimulus is more effective than under a more responsive monetary policy, such as the Taylor rule. Nonetheless, even under fixed interest rates results differ which can be attributed to both diverging views on the elasticity of interest rates and the duration of unresponsive monetary policy. Put aptly and thus moving away from strictly economic terms, the view on the connectivity between interest rates and the effect of fiscal stimulus is a question of human behavior. Essentially, the effect monetary policy has on estimates of the fiscal multiplier crucially depends on assumptions inter alia about whether people save or consume, whether people respond to altering interest rates or not.

This notion is best captured when looking at the crowding- in effect versus the crowding -out effect. The question of whether fiscal stimulus boosts or discourages private investment in the long run basically boils down to the rather general question about how people react to increased government expenditure.

Having said this, to a certain extent the paper also aimed at decoding economic models. This is important, since results are often presented in an allegedly objective manner. It ought to be recognized though, that for instance “rational expectations“ are a concept, upon which research relies, not a sacrosanct truth. Therefore, general claims that fiscal policy works (e.g. Romer,2011,p.6) are to be negated. The same logic applies to claims arguing that fiscal expansion is futile (e.g. Barro,2011). While both models have valid points, it needs to be clarified that their results are intrinsically tied to assumptions about economic

agents´ behavior. This was argued throughout the paper. Moreover, the paper shed light upon the role trade openness plays in determining the size of the multiplier. Both theoretical and empirical results confirmed the so called leakage effect, meaning that in a given economy the degree of openness determines to which extent fiscal stimulus leaks outside national borders due to trade. However, the paper did not suggest that open economies shall refrain from fiscal stimulus altogether. Results are yet again influenced by what is classified as an open economy as well as the difficulty in identifying exogenous shocks. However, research points out that joint action of governments might help to overcome the leakage effect[25] (Beetsma et.al., 2011,p.23). This also stresses that Keynesian ideas ought not to be dismissed by virtue of a mere historical comparison between largely closed economies in the 1920s and the contemporary globalized economies.

In conclusion the paper argued that the answer to the question why estimates about the fiscal multiplier are so different is twofold. Firstly, it depends on which factors are considered in a respective model. The second crucial factor is which underlying assumptions are involved in a model. As far as future research on the fiscal multiplier is concerned, one may suggest that recent events in the US and the Euro zone will spur the role of public indebtedness.

[25] In their study Beetsma et. al. refer to the EU, but concerted fiscal policy among nations has also been suggested for nations outside the EU (e.g. Ilzetzki et al,2011,p. 39).

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