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BACHELOR THESIS

The Role of the Interest Rate in Causing the Great Depression

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Declaration of Authorship

1. The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

2. The author hereby declares that all the sources and literature used have been properly cited.

3. The author hereby declares that the thesis has not been used to obtain a different or the same degree.

Prague, May 14, 2015

Bano Ali

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Abstract

This thesis analyzes the major causes of the severe economic depression appeared in 1930s. It focuses on the role of the interest rate in its causing and the duration of it. The aim is to - through the comparison of three economic schools - Keynesians, Austrians, and Monetarists - show the different views of understanding the interest rate as such and then apply them on the situation before and during the crisis to explain various perspectives on its role in possible causing of the contraction of economic activity in a process of the business cycle.

The comparison outlines, how deeply individual schools differ. While Keynesians considered the dear money and high interest rates as the main cause of the crisis and similarly to Monetarists, they both suggested keeping them on low level, Austrians promptly refused the policy of low interest rates.

Further, firstly, it shows the inverse relationship between the growth of money supply and interest rates in 1920s and proves that the decrease of interest rates was caused to large extent by the increased quantity of money. Secondly, it provides the evidence that the growth of money supply and of investment spending was larger than the growth of gross domestic product.

JEL Classification

E430, N120, E120, B220, B530

Keywords

Interest rate, Great depression, Keynesians, Monetarists, Austrian school

Abstrakt

Tato práce analyzuje hlavní příčiny těžké ekonomické deprese, která se odehrála ve 30. letech 20. století. Zaměřuje se na roli úrokové míry v jejím zapříčinění a trvání. Cílem práce je pomocí srovnání tří ekonomických škol - keynesiánské, rakouské a monetaristické – ukázat odlišné názory na chápání úrokové míry jako takové, a ty následně aplikovat na období před krizí a během ní, a vysvětlit tak odlišné perspektivy její role v možném zapříčinění poklesu ekonomické aktivity v průběhu hospodářského cyklu.

Toto srovnání nastiňuje, jak hluboce se jednotlivé školy navzájem odlišují. Zatímco keynesiánská teorie považují drahé peníze a vysoké úrokové míry za hlavní příčinu krize a podobně jako monetaristé radí udržovat je na nízké úrovni, rakouská škola naopak politiku nízkých úrokových měr rezolutně odmítá.

Dále práce nejdříve poukazuje na inverzní vztah mezi růstem peněžní nabídky a úrokovými mírami ve 20. letech a potvrzuje, že snížení úrokových měr bylo do velké míry způsobeno zvyšováním nabídky peněz. Poté je demonstrováno, že růst nabídky peněz a investičních výdajů byl vyšší, než růst hrubého domácího produktu.

JEL Klasifikace

E430, N120, E120, B220, B530

Klíčová slova

Úroková míra, Velká krize, Keynesiánci, Monetaristé, Rakouská škola

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Bachelor thesis proposal

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Supervisor: Mgr. Pavel Ryska, MPhil

Proposed Topic: The Role of the Interest Rate in Causing the Great Depression

Preliminary scope of work

The Great depression was a very important part in economic history. It highlighted the problems and bad decisions and one of them was a policy of low interest rates, which a credit expansion was connected with and as a consequence, among the other things, there was massive increase of investment activity.

Purpose of this thesis is to compare the views of Keynesians, Monetarists and Austrian School toward the conception of the interest rate and how they perceive its role in causing the Great Depression. This comparison will include firstly the individual theories of the interest rate and then, its possible role in the trade cycle leading to the recession.

Hypothesis:

1) Values of interest rates were not determined by requirements of the market, therefore there occurred significant imbalance.

2) Credit expansion and subsequent investment activity were not proportional to the growth of economy

OUTLINE:

1. Introduction
2. Literature review
3. Theoretical background
4. Comparison of three schools
5. Discussion

6. Conclusion

Literature:

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I. INTRODUCTION

The United States experienced a large economic growth during 1920's, also called "Roaring Twenties". In its earlier part, a huge technological boom brought formerly unrevealed physical innovations as well as impacted human's lifestyle and thinking. This period seemed to be a beginning of permanent prosperity and most people were making their decisions according to this presumption. Consumption greatly increased and so did the investment activity. It is important to mention, that this presumption was taken into consideration not only by ordinary people, who were in most cases not educated in field of economics, but also by government and further by monetary authorities, who were responsible for monetary and banking stability.

However, this time did not last forever. In late 1920's, the wrong decisions made under exaggerated expectations came out and the Great Depression replaced previous time of increased economic prosperity. From this time till now, numerous economists have provided countless theories to explain the exact causes of this depression. Some explanations are for example a loss of confidence leading to the reduction of consumption and investment activity, a collapse of financial markets and mistakes of financial authorities, or general instability of capitalist system.

The aim of this work is to compare the explanation of three schools – Keynesian, Monetarist and Austrian. It focuses on their interpretations of the role of interest rate in causing the Great Depression. Through this comparison, critical analyse should, on one side, display their ability of explaining the occurrence of depression and consequently, the solution suggested by individual schools and on the other side, provide the weaknesses of their interpretation in relation to the facts occurred during Great Depression.

It is predicted, that the low interest rate policy adopted in early 1920s was wrong and the credit expansion connected to it led to large increase of investment activity. This

corresponds to the theory of Austrian School, which refuses this policy. Therefore, there are two hypotheses to be analysed. Firstly, the values of interest rates were determined largely by increasing quantity of money. Secondly, the credit expansion and subsequent investment activity were not proportional to the growth of economy.

The work is organized into several parts. The introduction is followed by Chapter II, which provides a brief historical background and the process of various interest rates during the 1920s. Chapter III contains the theories of the interest rates of individual schools with following interpretations of its role in causing the Great Depression. In Chapter IV, the explanations of schools are discussed with testing of hypotheses. Chapter V will conclude the whole thesis.

II. HISTORICAL BACKGROUND

This chapter briefly outlines the main facts about the Great Depression to create a basement of the work. First subchapter introduces its general features and effects on the economy and also on economic thinking. The changes in the Dow Jones Industrial Index, in the loans of banks and the fluctuations of the inflation rate are shown here. Second subhead is focused particularly on the interest rate to see its processing during the period under review.

1. Great Depression

The Great Depression was the most severe downturn in the history which not only tremendously affected the world economy; it also greatly changed the way of economic thinking.

Regarding the effect on economy, there was no contraction of greater or even similar dimension in the deepness and the duration of its consequences. Only in the U.S. between 1929 and 1933 it causes the fall of Real Gross National product by 26,5 %, the Index of Wholesale Prices by 32 %, the Real Disposable Income per capita by 26 % and Employment Rate by 23 %.[1] The stock of money fell by over a third in this period, while in previous recessions in 1875-1879 or 1920-1921, the declines were about of "only" 9 % (Friedman & Schwartz 1933, p. 299). In this period, incredible number of 10 763 out of 24 970 commercial banks in the United States closed up (Smiley 2008).

Further, one of the ways of how economic thinking changed was the belief in monetary policy. Before the Great Depression it was considered as important instrument to achieve an economic stability. Under this belief the Federal Reserve System was created in 1913 by Federal Reserve Act – to avoid financial panics from previous years, especially the panic in 1907, it was appointed as a lender of last resort. Therefore it was necessary to apply efficient monetary policy with three main responsibilities – the highest possible employment, stable prices and control over long-

[1] FRED

term interest rates. The failure of the FED to correctly attain its targets and thus to avoid the contraction or at least mitigate its consequences radically changed the general opinion about the importance of monetary policy. Conversely, money was deemed as something that simply did not matter and that monetary policy had a very limited power to restore the economic stability.

Officially, it started on 24th October 1929, which is known as "Black Thursday". 12, 9 million shares were traded during it and this mass trading of shares continued for several days. On "Black Tuesday'' – exactly 5 days after the Black Thursday – 16 million shares were traded.

Table 1: New York Stock Exchange

YEAR	Volume of shares traded (millions)	Percentage change (base year: 1925)	Value of shares traded ($ billions)	Percentage change (base year: 1925)
1925	452,211	-	29,2	-
1926	449,103	-0,69 %	29,6	1,4 %
1927	576,991	27,59 %	40	37,0 %
1928	920,55	103,57 %	73,3	151,0 %
1929	1124,609	148,69 %	90	208,2 %
1930	810,633	79,26 %	44,2	51,4 %
1931	576,765	27,54 %	19,8	-32,2 %
1932	425,234	-5,97 %	7,5	-74,3 %
1933	654,816	44,80 %	14,6	-50,0 %

Source: Green (1971, Table 2)

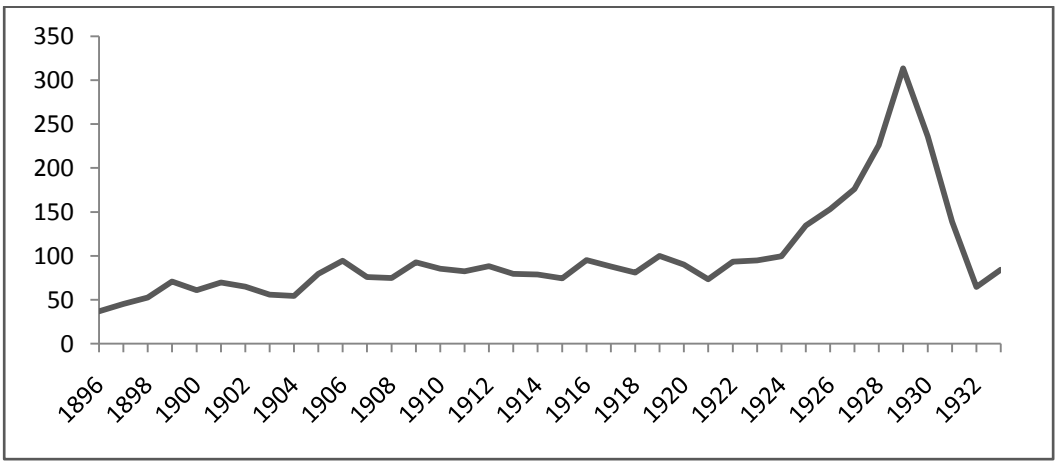
Table 1 shows the volume of shares traded and their total value between years 1925 and 1933. There is also the rate of change of both indicators to the base year 1925. It is obvious the development of both was not regular and indicated the discrepancies on the market.

Unfortunately, there were not many economists who predicted in right way, what was going on. Irving Fisher, forerunner of modern monetarism, was very exhilarated by the way of market development and he did not see any possible threat it could make. In opposite, he believed the value of shares in the stock market was reasonable due to the technological innovation and resulting increase of productivity. As a consequence,

the previous prosperity was expected by him as permanent and an assurance of that should have been the Federal Reserve System. John Maynard Keynes had the same expectations regarding the permanent prosperity. However, Ludwig von Mises was one of those, who were not very positive about the direction of the economy. He predicted the crash many years before it happened and it is the matter of course, as for a representative of Austrian School, a thorn in his side was the Federal Reserve System and his monetary policy.

Finally, to create a solid basement for the work, it is worth to submit the values of some main economic indicators. Firstly, in the Figure 1, the course of Dow Jones Index from 1896 to 1932 is displayed.

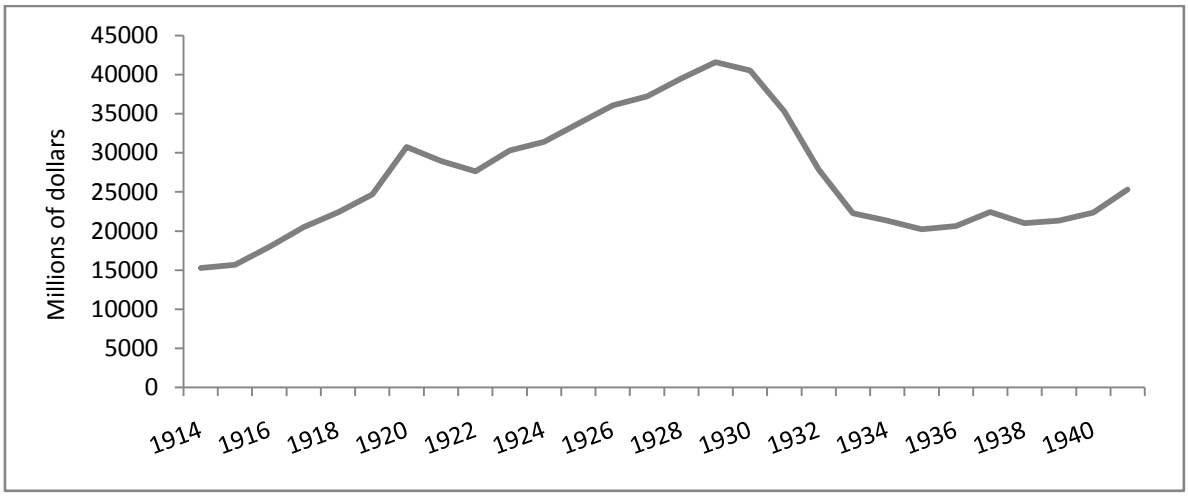
Figure 1: Dow Jones Industrial Index (1896 – 1933)



Source: Automation Information

Its initial value in 1896 started on 40, 94. As in that period investors were used to focus rather on particular stock issues, it did not become very ordinary. It firstly got to 100 in January 1906 and then, it was fluctuating between 70 and 120 to the year 1924, when in July, it hit 100 and it did not fall below this figure until September 1931. In December 1927, it got to 200 and just after a year it reached 300. While it took DJIA around 28 years to firmly achieve 100, the next 100 were obtained in three years, and further 100 only in one year. In September 1929, it reached its peak on 381, 17 and then, it began to decline sharply. In two years, it was again on the value 100.

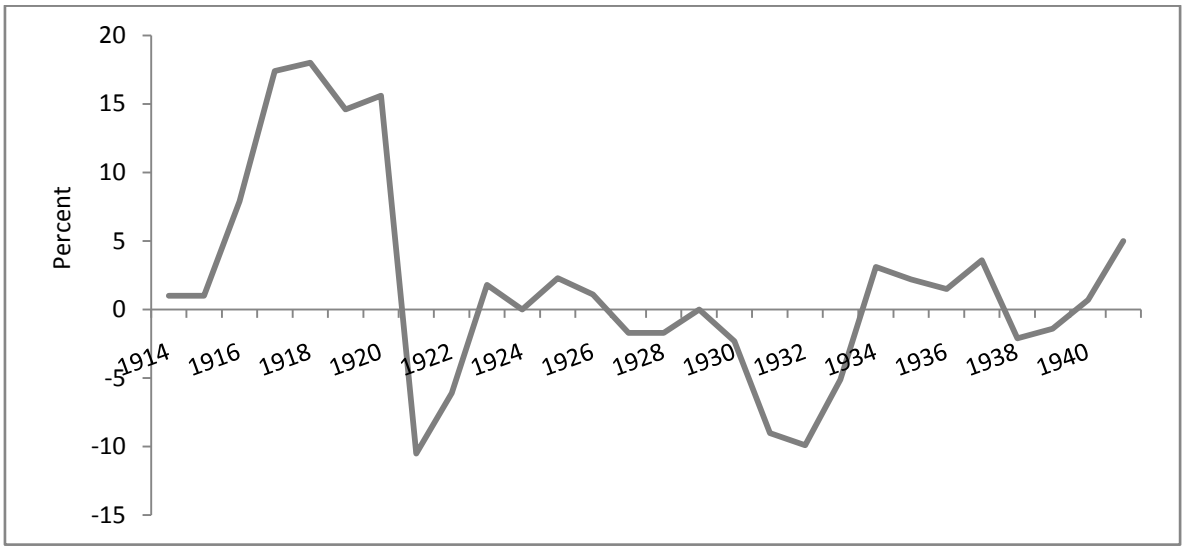
Figure 2: Loans of all banks in the United States (1914 – 1941)



Source: Banking and Monetary Statistics 1914 – 1941 (Table No.2)

Regarding the loans in United States during 1920s, obviously, it was a period of expansion. After World War I, when economy started to recover, there was a huge innovation boom in the early twenties, which prompted loans and investment to rise. Even though, it was slowed by a recession in 1921, it again increased after that period. In 1925, a real estate boom and later the stock market boom also occur and loans were increasing until the early 1929, when it started to decrease steeply. Then, it not increased until before the World War II.

Figure 3: Inflation rate (1914-1941)



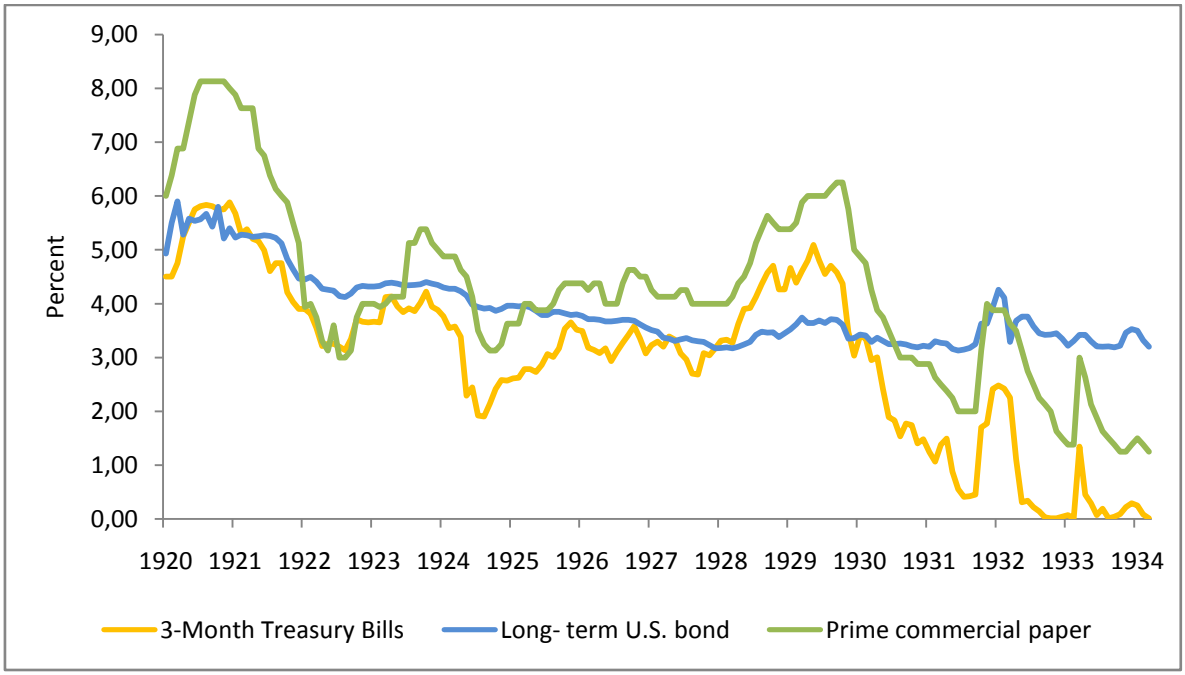
Source: US Inflation Calculator

Finally, the last included indicator of the 1920s is the inflation rate. Its course was very interesting, as in the second part of 1915, it started to increase hugely due to the massive expansion of money supply to financially cover the World War I. However, the decline of the economy after it conversely brings the deflation, which in June 1921 reached the value 15,8 %. In lately 1923 and 1925, it was rising to the higher values, but otherwise it was fluctuating around zero value. In the second part of 1929, deflation again started to increase and at the end of 1931, the rise became even steeper. It crossed zero in early 1934 and inflation reached the positive values.

2. Interest rate

Since the early twenties, interest rates started to decline distinctively and this trend had remained till 1947. In American investment market, mostly traded investment media in those days were corporate bonds, real estate mortgages, stocks, then federal government bonds, state and municipal bonds and other types of short-term loans (Homer & Sylla 2005).

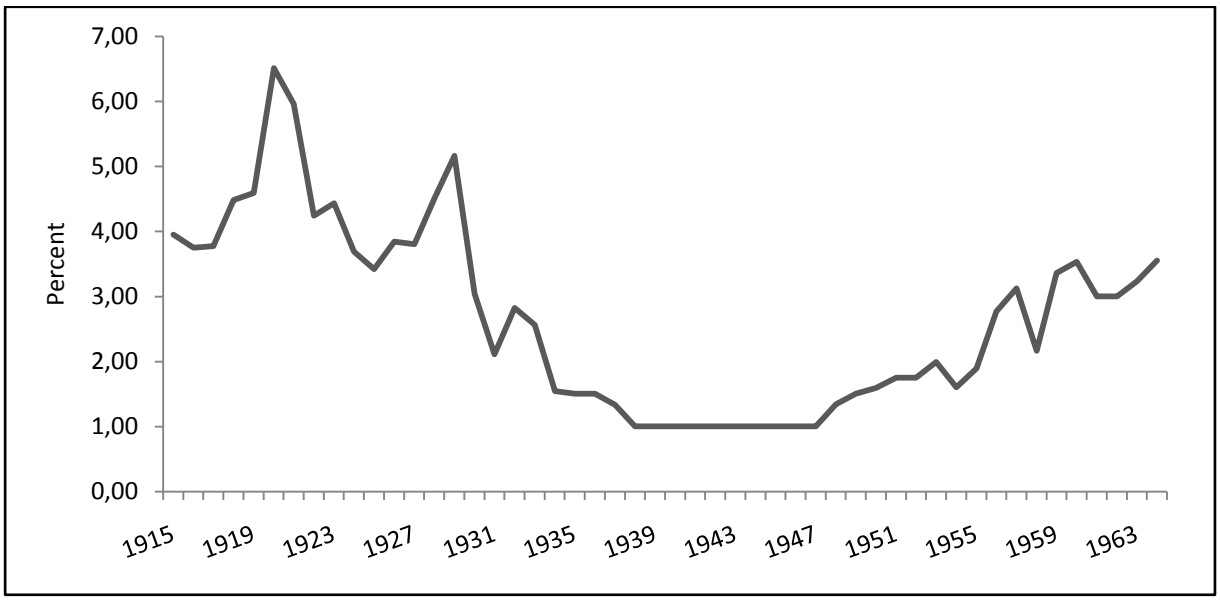
Figure 4: Yields On Short-Term United States Securities, U. S. Long-term bonds and Prime Commercial paper (1920-1934)



Source: 3-Month Treasury Bills retrieved from FRED, Prime commercial paper and Long-term U.S. bond from Banking and monetary statistics: 1914 – 1941 (Table No.120, 128, respectively)

Figure 4 shows the changes of yields on different types of securities during 1920s and early 1930s. The rates in time of recession in 1920-1921 shows, that it was one of few crisis, when the interest did not decrease with the decrease of business activity. After 1922, the large decrease of yields on short-term securities occurred, particularly on the corporate bonds, which had lasted since June 1921. Therefore, larger fluctuations had occurred in yields of both short-term securities and as usual, the yields on long-term U.S. government bond were basically remaining stable all over the examined period. The interest rates started to increase in early 1928 and lasted till autumn 1929, after that, it largely decreased. Further increase occurred in late 1931, when British abandonment of gold standard with subsequent devaluations, distrust of dollar, and collapse of banking system occurred. However, in 1932, a huge decrease of yields on short-term securities again interrupted the rise.

Figure 5: Annual Discount Rates, Federal Reserve Bank of New York for United States (1915-1964)



Source: FRED

Figure 5 outlines the changes of annual discount rates of Federal Reserve Bank of New York for longer time – from 1915 till 1964. Apparently, the decrease of discount rate from recession in early 1920s till Great Depression was of almost 60 %. Also, the huge reduction of interest rate after 1920 is obvious. This reducing lasted for next 27 years.

III. THE REVIEW OF SCHOOLS

The Great Depression was a period in the history, which significantly highlighted many aspects of behaviour of economic system. There are many variables, which, if they do not operate in right way, can cause huge problems. The big question is what the right way is. This chapter describes the different views of schools of the issue of interest rate. Firstly, the theory of John Maynard Keynes is expounded. Then the theory of Friedman and Monetarists follows. Finally, the theory of Austrian School is presented, which completely differs from the two previous theories. Each time, firstly the general concept of interest rate is explained and then, it is followed by opinion of the role of interest rate in relation to the Great Depression. At the end of the chapter, the issue of forced savings and the consequences of the credit expansion on the economy are described.

1. The Keynesian Theory

In very simple way, John M. Keynes believed that the Great Depression was caused because of the decrease of demand – a reduction in the consumption and investment occurred due to the lower confidence of economic agents and with simultaneous occurrence of deflation, they refused to spend much. The aim of this chapter is to explain, what his concept of the determination of the interest rate was and what he found as a problem in its behaviour before the Great Depression.

1.1. The conception of the interest rate

First of all, it would be appropriate to outline the Keynes vision of an interest rate. At the very beginning of the chapter The General Theory of the rate of interest he states (1964, p. 165) there are two different things – the marginal efficiency of capital[2] and the rate of interest; despite of they are through the rate of investment kept equal, they are not the same. The marginal efficiency of capital stands for demand side – it determines the circumstances, according to which the loanable funds are demanded in order to make new investments, while the rate of interest stands for supply side – it defines the rules according to which these loanable funds are supplied. Therefore, the interest rate depends somehow on the relationship between the schedule of the marginal efficiency of capital and psychological propensity to save.

However, the interest rate definitely cannot be deducted from these two factors; he explains that an individual has to face two questions when deciding about its time-preferences. Firstly, through the propensity to consume, the exact amount of savings is defined. Then, it is followed by the decision, in which form the given savings will be held. There comes the first factor, which determines the interest rate – the liquidity-

[2] Keynes (1964, p. 135) defines the marginal efficiency of capital in following way: *"More precisely, I define the marginal efficiency of capital as being equal to that rate of discount which would make the present value of the series of annuities given by the returns expected from the capital-asset during its life just equal to its supply price."*. He criticizes Mises' theory of interest as it causes confusion between the marginal efficiency of capital and the interest rate, while Keynes says, they are not the same. Rothbard (2009, p. 371) argues that actually, it is the rate of interest, because it is a part of the market, which changes in time.

preference. This is the second part of deciding about the individual's savings and that is for what Keynes criticises other theories - of basically neglecting it. He thinks they emphasize the importance only of the factor of the amount of savings to determine the rate of interest. He illustrates the importance of both on the fact that the interest rate is not a reward of hoarding the savings in cash, as there is no reason to obtain any value above the owned amount in that case. Conversely, he takes the view the interest is the reward of giving up the liquidity for some given period of time (1964, p. 166-167).

"For the rate of interest is, in itself; nothing more that the inverse proportion between a sum of money and what can be obtained for parting with control over the money in exchange for a debt for a stated period of time." (ibid, p. 167)

The interest rate is not the equilibrium price between the demand of money to invest and the willingness not to consume all the available income and hold on to the future with its spending. It rather equilibrates the amount desired to be held in cash with the available quantity of cash in the economy. This is considered by Keynes as a second factor determining the rate of interest. Therefore, the mentioned first factor – the liquidity-preference (L) fixes the amount of the second factor – the quantity of money (M), which is willed to be held by the public with given rate of interest (r). Expressed as a functional dependency - M=L(r). (ibid, p. 168)

One of the reasons why in general the interest rate is considered as a reward of not-spending, when, actually, it is according to Keynes a reward of not hoarding, is neglecting the relations of the interest rate and hoarding. The liquidity-preference is brought closer just by the concept of hoarding; where he emphasises that "hoarding" is not simply an increase of actual holding of cash.

"For the amount of hoarding must be equal to the quantity of money (or—on some definitions—to the quantity of money minus what is required to satisfy the transactions-motive); and the quantity of money is not determined by the public. All

that the propensity of the public towards hoarding can achieve is to determine the rate of interest at which the aggregate desire to hoard becomes equal to the available cash." (ibid, p. 174)

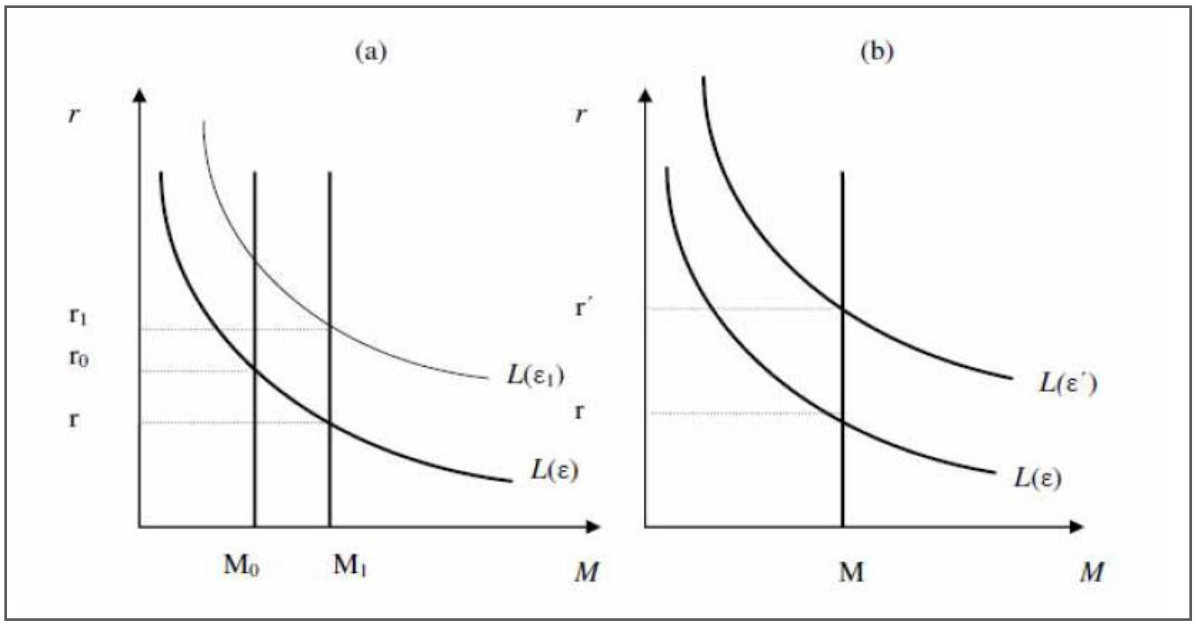
To fully perceive, why the liquidity-preference exists at all, Keynes (ibid, p. 168) explains it by an uncertainty of the future interest rates. It is a matter of course that the amount of wealth, held in liquid form, would be much lower in case of possibility to compute the future interest rates from the present ones, at least in case of high positive ones. There also comes the fact, that there will be different computed estimations of them by different people and if they find their estimations reasonably dissimilar, they will prefer to hold the liquidity to adequately respond in a timely situation.

Analyzing each motive to liquidity-preference, according to Keynes, the transactions-motive and the precautionary motive, to require the specific amount of money, are related particularly to general economic activity and the level of money-income. Basically, they are the only influence of these motives. However, considering the speculative-motive, the monetary management operates through it to influence the economic system. This motive is vigorously responsive to the changes in the interest rate, explicitly given by the continuous curve relating the changes in the demand for money formed by the speculative-motive and the changes in the interest rate (ibid, p. 195-197). He thinks "open-market operations" would not be carried out without it.

There are two initiatives causing the changes in the interest rate. Firstly, they are the changes in the money supply, which is available for speculative-motive, but they do not cause the change of the liquidity function. Secondly, they are those related particularly to the changes in expectations of the future, which cause the function of liquidity itself to change. Regarding this change, the market transactions would not necessarily change the interest rate, if the news about the expectations affected the judgement of every one unequivocally; the interest rate would change immediately to that extent to neutralize individual's desire to change his holding of cash due to the

previous rate and he would consequently change his predictions of the future one in the same way as any body else and no change in the quantity of money would take place (Figure 6.b). However, in general this change of expectations will cause some movement of money between individuals, because clearly, it cannot have the same effect on every one and the new interest rate will lead to the redistribution of money.

Figure 6: Liquidity preference in practice: Open-market operation



Source: Tily (2012, Figure 2)

It is further explained, that despite of the change in the quantity of money in the economy, it does not have to necessarily affect the interest rate as the increase in the quantity of money is expected to reduce the interest rate. Its value remains the same in the case of adequate change in the liquidity preference, respectively its increase. According to this theory, the interest rate can even increase with the higher quantity of money in the economy. In conclusion, the eventual effect of the interest rate is not apparent, because it can be influenced by both of these variables.

To get back to the motives of liquidity preference, apparently, people always hold some amount of cash beyond what is for satisfying the transactions and precautionary motive and this will affect the total amount of cash in economy. This every amount created by a monetary authority is related to the determination of complex of interest rates. This fact leads to the evident connection between changes in the quantity of

money and changes in the interest rates. This connection would be direct if the monetary authority also dealt in debts of all maturities and even of varying levels of risk. Therefore, the complex of interest rates would be determined by the circumstances under which the banks would acquire or part with debts and the quantity of money would be the amount preferred by individuals to be held in cash rather than to exchange it for a debt.

This is the Keynes' approach towards the determination of the long-term interest rate. Specifically, he distinguishes between short-term and long-term securities by the differences in risk of capital yield related to the changes in the interest rates and believes the latter ones are affected to a much greater extent. And apparently, he understands it as a psychological aspect in the economy. However, in connection with the monetary policy, he changed his view from psychological rather to conventional aspect and take it mainly as a monetary phenomenon. He perceives mainly its practical sides and consequences and categorically refuses the natural rate of interest and the theories according to which the rate of interest equilibrates the demand and supply for loan able funds, because he considers the level of income as a variable equalizing savings and investment.

1.2. The trade cycle and the interest rate

In this part, Keynes findings about the trade cycle will be analysed and applied on events occurred before and during the Great Depression.

Keynes (1964, p. 313) claims that the very nature of the trade cycle lies in the marginal efficiency of capital, respectively in its fluctuations, even though there are other factors as fluctuations in the propensity to consume or in the liquidity-preference, etc. influencing it, but not as largely as the marginal efficiency does. Another feature of the trade cycle is that the forces driving the system upward or downward do not work only to that extent that they gradually strengthen and in other part of the trade cycle they weaken, they can be completely opposite to their previous level. Using this, Keynes explains the part of the trade cycle – the phenomenon of the crisis.

"...—the fact that the substitution of a downward for an upward tendency often takes place suddenly and violently, whereas there is, as a rule, no such sharp turning-point when an upward is substituted for a downward tendency." (ibid, p. 314)

The value of the above mentioned marginal efficiency of capital is not only based on the actual quantity of capital; it is important to realize its future yields, or better to say – its estimations, influence its value hugely. In this context, Keynes mentions the opinion of majority that the increased demand of money is related to the increase of the interest rates. However, he thinks the main explanation of the crisis is huge decrease of the marginal efficiency of capital rather than increase of the interest rates. In a period before crisis, it is usual that the interest rates increases due to the optimistic expectations about the future yields and the rising costs of the capital are disregarded as well as its unnecessary amount. In the environment of these exaggeratedly positive expectations, there is usually no place for correct estimation of the future yield and the investment markets are doomed to collapse. Then, due to uncertainty, it causes the decrease of the marginal efficiency of capital and consequently the liquidity-preference increases and then, so does the interest rate. This decrease of the marginal efficiency of capital simultaneously with the increase of the interest rate can lead to even greater decline in volume of investment. It is worth to mention, that according to Keynes, the marginal efficiency has to collapse, so the liquidity-preference can increase. This shows that the fluctuations of the liquidity-preference are rather a result of fluctuations of the marginal efficiency of capital, which is therefore confirmed to be the essential factor causing the trade cycle.

Keynes (ibid, p. 316) further claims the following growth of the marginal efficiency of capital is accompanied by the decline of the interest rate, which is most probably its necessary condition.

Nevertheless, it is not a sufficient condition as no reduction of the interest rate would help the marginal efficiency of capital to rise in a time of crisis, when its value is

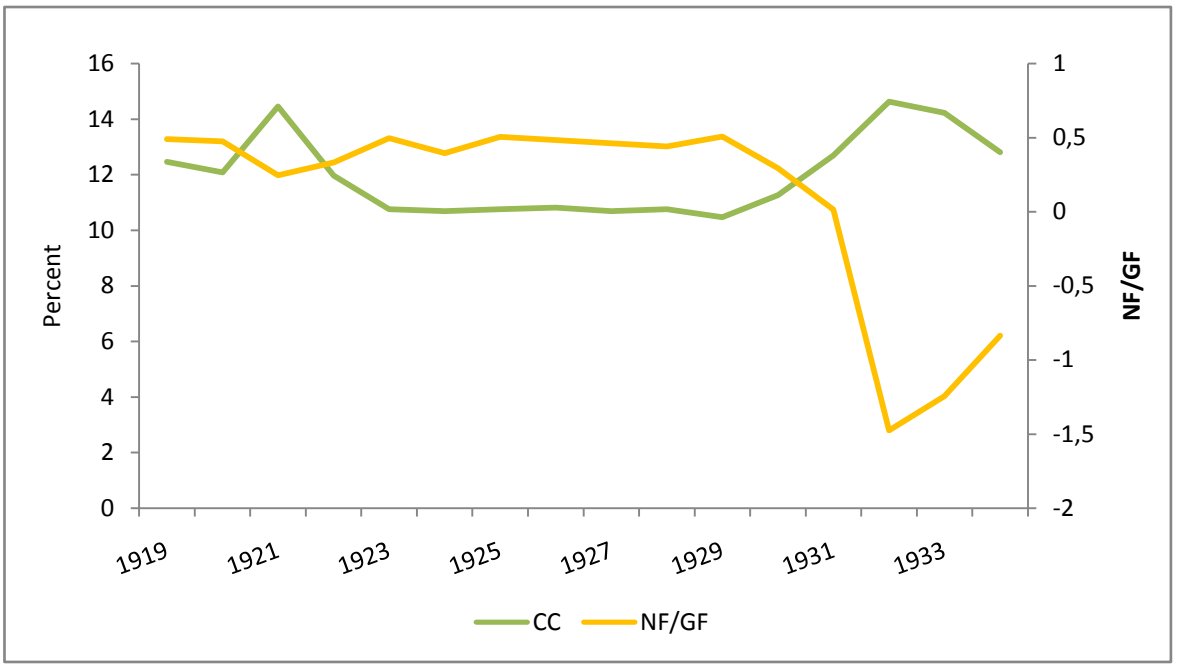
disrupted so deeply and determined particularly by the psychology of people, who have to get back their confidence in business world. Otherwise, its control would be very simple and through the tools available for the monetary authority, so the crisis would not be so long. It is, however, reminded that market estimation of the marginal efficiency of capital can be very unstable, so maintaining them on a satisfactory rate by the changes of the interest rates is very improbable. That is summarized with a statement, that the volume of investment should be regulated by the state, because otherwise it can cause huge changes in employment and also in the propensity to consume. Eventually, it definitely does not mean, that a banking policy can influence the interest rate to that extent to determine any equilibrium rate of investment (ibid, p. 320).

Regarding the overinvestment, there are two kinds of it explained (ibid, p. 320-321). Firstly, the investments, which do not satisfy the expectations of investor enough or due to the huge unemployment they are not usable. Then secondly, it can mean, that there is no need of new investment due to a current abundance of the capital goods, because the possible yields it can make, would not outweigh its replacement costs, even though, there would be full employment. The former case is typical for the period of boom, because the decisions to invest are based on exaggerated expectations. And the latter case, it is the overinvestment in the true sense of the term, when any further investment would be only a waste of resources. Keynes suggests introducing measures in form of redistributing incomes or similar ones to stimulate the propensity to consume rather than increase the interest rate, which can conversely diminish it and also refrain from some useful investments.

"In the United States, for example, by 1929 the rapid capital expansion of the previous five years had led cumulatively to the setting up of sinking funds and depreciation allowances, in respect of plant which did not need replacement, on so huge a scale that an enormous volume of entirely new investment was required merely to absorb these financial provisions; and it became almost hopeless to find still more new investment on a sufficient scale to provide for such new saving as a wealthy community in full

employment would be disposed to set aside. This factor alone was probably sufficient to cause a slump." (ibid, p. 100)

Figure 7: Capital Consumption as percentage of Gross National Product and the proportion of Net to Gross amount of Capital Formation



Source: Kuznets, Epstein, and Jenks (1946, Table No. I-13, 15-17), in 1929 Prices

Figure 7 provides the amount of Capital Consumption as percentage of Gross National Product and the proportion of Net to Gross amount of Capital Investment. Actually, Keynes believed, that in the period before the crisis, there was a huge amount of overinvestment of the above mentioned second kind. And considering his viewpoint of actually wasting of resources, obviously, the process of Capital Consumption remained stable during the examined period, so it did not exhibit increased amount of repairing or depreciation. However, despite of other conceivable factors causing the high value of costs connected to the capital already owned, the proportion of net to gross amount of capital formation was very low during 1920s. Essentially, it hardly got over 50 %.

"Personally I have come to believe that interest – or, rather, too high a rate of interest – is the 'villain of the piece' in a more far-reaching sense than appears from the above.

But to justify this belief would lead me into a longer story than would be appropriate in this place." (*CW Vol no.* XXIX, p. 16)

That concludes that the effects of the interest rate cause the boom to end in a slump, because it is very high and another reason is that the incorrect expectations about future disable the actual interest rate to establish on the level of full employment to stop the slump.

Keynes then defends the decline of the interest rate caused by the increased quantity of money, when this decline induces an increase of investment. The new money is created, because of the increase of the liquidity-preference, which corresponds to the lower interest rate or to the increased volume of transactions. However, this view is arguable as there can be other reasons for increasing the quantity of money in economic system and, if this quantity was determined in a larger scale than the change of the liquidity preference, it would indeed induce the increase of the volume of investment leading to the above mentioned overinvestment.

Concisely and factually, Keynes's remedy for the boom leading to the slump is to reduce the interest rate relatively to the marginal efficiency of the capital up to the point of full employment (ibid, p. 375). It would be an assumption for a permanent economic prosperity. However, in his Treatise of Money he corrected himself regarding his calling for cheap money:

"Anyone who looked only at the index of prices would see no reason to suspect any material degree of inflation, whilst anyone who looked only at the total volume of bank credit and the prices of common stocks would have been convinced of the presence of an inflation actual or impending. For my part I took the view at the time that there was no inflation in the sense in which I use this term. Looking back in the light of fuller statistical information than was then available, I believe that whilst there was probably no material inflation up to the end of 1927, a genuine profit inflation developed some time between that date and the summer of 1929." (Robbins 1971, p. 49)

2. The Monetarist Theory

Monetarists' opinion about the Great Depression is that it firstly was a usual recession, which due to the authorities in economic system turned to the huge depression. Their theory of the interest rate does not explain the function of the interest rate much in depth – regarding both generally the economic system as well as the role of it during the Great Depression. They refer particularly to the changes in money supply, so the following interpretation of their theory is taken mainly in relation to it.

2.1. Determination of the interest rate

This chapter will outline the Monetarist view on the interest rate. As they do not have a unified theory of it as other schools have, main factors influencing it, particularly the money supply will be examined, and compared to the theory of Keynesians.

In contrast to Keynesians, Monetarists consider the interest rate mainly as a real phenomenon, which should be determined completely by the market forces. This uncontrolled determination should be gained through the regulation of the monetary base as according to monetarists' monetary growth rule, it is necessary to either fix the quantity of money or to set a specific rate of its growth independent from the cyclical fluctuations occurring in the economy. Simultaneously, the rate of growth should be predictable, constant and restricted by the rate of growth of labour force. However, it should be mentioned, that according to Monetarists, this rule has never fully been implemented by central banks (Oster 2003, p. 52-53).

Therefore, the supply of money available in the economy depends on the monetary system and thus, it is an exogenous variable. According to Friedman (1987, p. 9), three main determinants of the money stock are:

a) the amount of high-powered money[3]
b) the ratio of bank deposits to bank holdings of high-powered money
c) the ratio of public's deposits to its currency holdings

[3] High-powered money consists of currency held by the public and the commercial bank reserves.

Friedman defines it by the identity

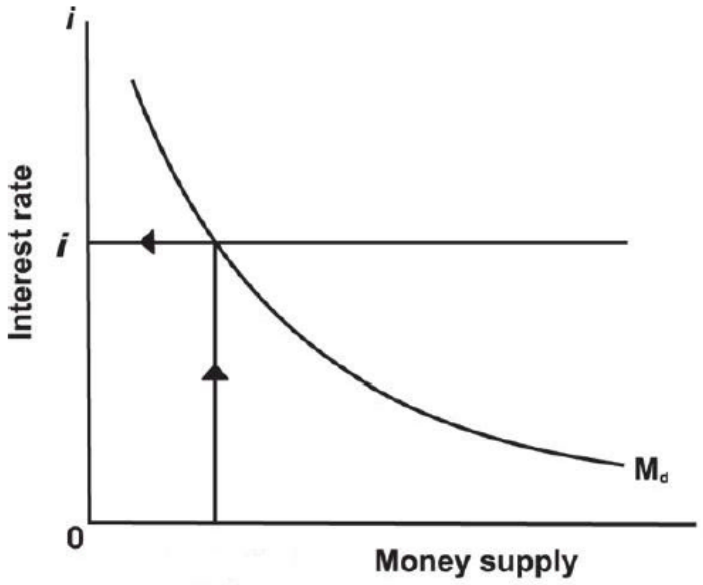
$$M = H * \frac{\frac{D}{R}(1 + \frac{D}{C})}{\frac{D}{R} + \frac{D}{C}}$$

where *H* = high-powered money; *D* = deposits; *R* = bank reserves; *C* = currency in the hands of the public so that (*D/R*) is the deposit-reserve ratio; and (*D/C*) is the deposit-currency ratio (ibid, p. 9).

The quantity of high-powered money is determined mostly by the monetary or fiscal authorities. Considering the deposit-reserve ratio, its value depends on the requirements of the central bank and then it is readjusted to the needs of banks in case of necessary conversion of bank deposits to the high-powered money. This cost of acquiring high-powered money together with the returns from loans and investments is essentially what constitutes the interest rate. Finally, the deposit-currency ratio is the only variable determined by the public. Here, however, the relative cost of holding one of them depend on the interest rate on the bank deposits, which can be again directed by monetary authorities (ibid, p. 10).

The interaction between nominal quantity of money supplied and the real quantity demanded gives the amount of real quantity of money supplied. The point is that Monetarists take the money supply as exogenous variable determined by central banks and the interest rate is endogenous variable, which floats according to the quantity of money supplied in the money market. More precisely, the high-powered monetary base is exogenously set and then the short-term interest rate endogenously reacts (Oster 2003, p. 29).

Figure 8: Endogenous interest rate



Source: Oster (2003, p. 30)

Friedman, conversely to Keynes, finds the relation between the demand for money and the interest rate as negligible, or more correctly, he was not able to find any significant relationship between these two variables. Nevertheless, he does not refuse it. He rather claims, that firstly, the interest rate has no such an effect on the quantity of money demanded as the real per capita income and secondly, the interest elasticity of demand function is not very high (1966, p. 72). Additionally, he explains the erroneous judgements about it being high occur due to inability to distinguish between movement along and a shift of a demand or supply function or between the real and nominal magnitudes (1966, p. 85).

Further, some differences between Keynesians and Monetarists regarding the interest rate are outlined by Friedman (1987, p. 22).

1) Keynesians believe that the change in the quantity of money firstly affects the interest rate an then through it, the spending is indirectly affected, whereas according to Monetarists, the spending is affected directly, because people want to dispose of what they consider as excessive money.

2) Friedman claims that Keynesians take into account a limited range of marketable assets and interest rates and thus, a small part of the market rates are explained, when the larger range of them should be considered – concretely durable and semi-durable consumer goods, structures and other real property.

Monetarists also suggest different targeting of central banks. They recommend a money supply target rather than the interest rate target (Oster 2003, p. 64). Monetarists believe the growth rate of the money supply is directly connected to inflation. These changes in the money supply must be upheld by precise predictions and estimations about velocity of money in the economy. However, Friedman later (in June 2003) accepted the decision about the money supply targeting was not as successful as could have been expected (Nelson, 2007, p. 171).

2.2. The failure of the Federal Reserve System

For Friedman and Schwartz, conversely to Keynes and similarly to Mises, the main cause of the Great Depression is the failure of the Federal Reserve System to fulfil its duties. However, the monetarist's view was completely different in the sense that the Federal Reserve System did not do enough to avoid the depression, whereas Austrians said, that it intervened too much, so that the situation was unsustainable.

As mentioned in previous chapter, Monetarists do not have a unified theory of the interest and assume its endogeneity and so, they not take it as a primary factor causing various fluctuations in a trade cycle. Generally, it changes through the control of the money supply. Friedman and Schwartz (1993, p. 312) claim, that behaviour of the interest rate in early 1930s consistently reflects the effects of typical cycle and of the banking crisis occurred. As can be seen from Figure 4, in the middle of the year 1930, the difference between the yields on private and government bonds starts widening. On one side, the yields on former bonds increase, while on the other, the latter ones continue to fall. It is explained by the needs of banks to get a necessary liquidity; so firstly, they get rid of the low-grade bonds and want to hold government bonds as secondary reserves for the future. This reduction of the prices of bonds held by banks

decreases the market value of their bond portfolios and thus contributes to subsequent bank failures.

To return to the main factor causing the Great Depression, in 1913, the Federal Reserve System was established by Federal Reserve Act as the system of twelve regional banks supervised by the Federal Reserve Board in Washington. Their function was to work as "lenders of last resort" to the commercial banks. And that is what for Friedman blames it – for not fulfilling its main function (1980, p. 75).

"The System could have provided a far better solution by engaging in large-scale open market purchases of government bonds. That would have provided banks with additional cash to meet the demands of their depositors. That would have ended—or at least sharply reduced—the stream of bank failures and have prevented the public's attempted conversion of deposits into currency from reducing the quantity of money. Unfortunately, the Fed's actions were hesitant and small. In the main, it stood idly by and let the crisis take its course—a pattern of behavior that was to be repeated again and again during the next two years." (Friedman, M. & Friedman, R. 1980, p. 83)

Compared to the previous years, when money supply was continuously increasing, from 1930, the Federal Reserve System let it decline. Till March 1933, it fell of about one-third (ibid, p. 79). Concurrently, it still did not begin with open-market purchases of government bonds and in addition, when in September 1931 Great Britain left the gold standard, the Federal Reserve System reacted with raising the discount rates. As Friedman (ibid, p. 73) mentioned, it did it even more sharply than ever before. The failures of so many commercial banks were inevitable. Even though, in April 1932, it was forced by Congress to begin with open-market purchases, it lasted only for a short time till August 1932.

Meltzer (1976) explains the possible reason of the failure of FED. It introduced a framework to analyze monetary policy developed in early 1920s by Riefler, Burgess,

Strong, and other leaders of the Federal Reserve System[4] and its main points are outlined by Meltzer (ibid, p. 464-465) as following:

1. member banks borrowed only in case of 'need' and with reluctance;
2. borrowing from the Federal Reserve made banks reluctant to expand, so they raised lending rates and reduced the volume of bank credit;
3. open market purchases encourages banks to repay borrowing and therefore made banks more willing to lend to customers; open market sales forced banks to borrow from the Federal Reserve, so banks reduced loans to customers;
4. reductions in short-term rates were followed by reductions in long-term rates

This framework was developed for the reason that the member bank borrowing did not have to be controlled exclusively by the discount rates. Concurrently, it assumed stable prices due to the gold standard.

Table 2: Policy in the first half of the contraction

End of	Change in monetary base from 8/1929 (millions)	Member bank borrowing (millions)	Change in gold stock from 8/1929 (millions)	Interest rate 3 to 6 month treasury notes	Decision or action (millions)
9/1929	8	969	-56	4,57	buy $25/week
10/1929	1	885	30	4,7	buy (total net purchases of $120 million)
11/1929	41	953	23	4,26	buy $200 maximum
1/1930	-180	501	-68	3,39	None
3/1930	-265	274	43	2,95	None
5/1930	-248	247	154	2,41	None
6/1930	-222	251	177	1,89	buy $50
9/1930	-279	189	152	1,77	None
12/1930	-87	338	232	1,48	buy $100
1/1931	-91	253	271	1,24	sell $20
4/1931	-91	155	360	1,49	buy $100

Source: Meltzer (1976, p. 464)

[4] Winfield Riefler was an assistant of the chairman and later Secretary of the Federal Open Market Committee (Meltzer 2009, p. 43). W. Randolph Burgess was an Assistant Federal Reserve Agent of the Federal Reserve Bank of New York and in 1936 he became a Vice President (Garbade 2012, p. 197). Benjamin Strong was the Governor of Federal Reserve Bank of New York (Rothbard 2000).

As can be seen from the Table 2, total of 500 million dollars were purchased in bills and securities, while the reduction in member bank borrowing was about 900 million dollars (ibid, p. 463).

One of the two main reasons of failure was according to Meltzer (ibid, p. 465) inability to distinguish between real and nominal interest rates. Apparently from the Figure 3, the deflation of 8, 8 % in April 1931 would have never been taken into account by Federal Reserve System, if it had considered that the interest rate had been on low level. The second reason, in opposition to the quantity theory of money, was a real bills doctrine, which was incorporated in the Federal Reserve Act, and which highly depended on the demand of commercial banks as to discount real bills. Eventually, the framework could be taken as logical approach to monetary policy, but *"not a basis for resolving all disputes"* (ibid, p. 467).

3. The Austrian School Theory

The theory of Austrian School hugely differs from the other two. Even though, similarly to Monetarists, they analyze the macroeconomic aspects of economy, particularly the money supply and the failure of the FED, they focus mainly on the period before the outbreak of Great Depression and its reasons.

3.1. The conception of the interest rate

In this chapter, the notion of Austrian School about the interest rate will be introduced. Even though the view is not as unified as in the case of Keynes, the opinions of some representatives, particularly Böhm - Bawerk, Mises, Hayek and Rothbard, are displayed here to generally understand the role of the interest rate in Austrian Theory.

"Present goods are, as a rule, worth more than future foods of like kind and number." (Böhm-Bawerk 1891, p. 237)

Austrian School emphasize the role of the time preference in the determination of the value of the interest rate. It is useful to firstly introduce the phenomenon of the originary interest rate, which was explained in detail by Ludwig von Mises. Basically, it is the ratio of the value given to a fulfilment of requirements in the immediate future and in further periods of it (1998, p. 523). There are some characteristics of it described by Mises (ibid, p. 523-526) and Rothbard (2009, p. 370):

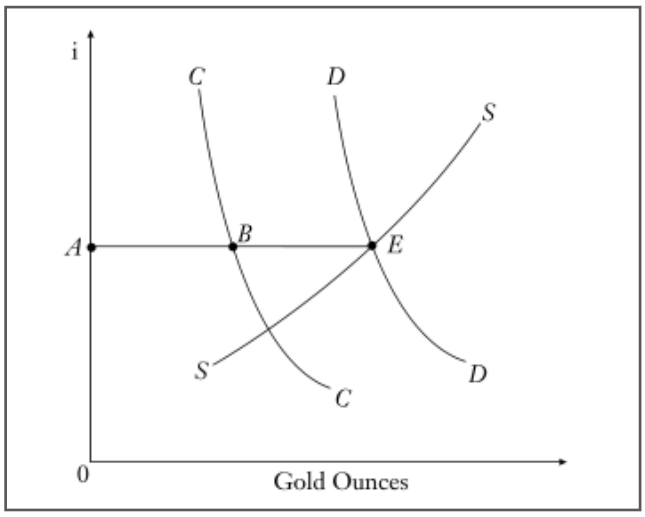
- it is not determined on the market by the interaction of the demand for and supply of capital, on the contrary, it determines these two variables itself
- it is not the reason why people save and accumulate capital – it is not a reward for abstaining from immediate consumption
- it is a category of human action
- the existence of the originary interest rate is implied by the existence of scarcity
- it should be uniform for each good and additionally for every stage of every good

Considering the influence of value of the interest rate as to increase or decrease the volume of savings and capital accumulation, Mises argues there is no reason for these variables to be directly related. The value of the originary interest rate depends on how the future good is valued. The amount of savings does not change with the originary interest rate; the same applies for the amount of capital accumulation and of the available supply of capital goods (1998, p. 530).

Apparently, the originary interest rate is rather an imaginary phenomenon, which can never occur in a real world. It can be applied only in ERE. [5] Generally, it outlines, how the interest rate was understood in the true sense of the word. However, according to Mises, the gross interest rates are comprised also of other components. For Rothbard, this rate of interest[6] is the appropriate rate of interest, whereas an uncertainty causes its deviations emerging into market interest rate different from the originary one.

"From this it becomes clear that the time preferences of the individuals on the market determine simultaneously and by themselves both the market equilibrium interest rate and the proportions between consumption and savings (individual and aggregate)." (Rothbard 2009, p. 400)

Figure 9: Determination of the equilibrium interest rate on the time market



Source: Rothbard (2009, p. 418)

[5] Evenly rotating economy is characterized as a state of the economy eliminated of change in the data and of the time element; for more see Mises (1998, p. 245)
[6] It is called a pure rate of interest by Rothbard.

Figure 9 shows, how the interest rates are established on a time market. The vertical and horizontal axes represent the interest rate and gold ounces, respectively. The SS curve is determined by the amount of savings of all as the supply of present goods for future goods. The CC curve represents the consumers' demand for present goods and the DD curve is the total of consumers' and producers' demand for present goods as the suppliers of future goods. The equilibrium interest rate (0A) will be determined by the intersection of the SS an DD curve (point E). The total supply of savings is represented by AE and BE is the amount of investment in production (ibid, p. 418-419).

As mentioned above, for Austrian School, the gross market rates of interest are not the pure ones. The yield of creditors does not contain only a net interest, there are also two other components. Firstly, it is the entrepreneurial component, which is comprised of all types of risk related to the provided loan and also of the legal and institutional setting. The second component is the price premium, because in real world it is necessary to take into account the changes of purchasing power. Thus, it displays the anticipated changes in the money relation. This premium can be both positive and negative and can never be entirely removed. It is worth mentioning that the price premium is not generated by the change in a supply of money, but precisely its effects on the price structure. Eventually, on the loan market, there is a tendency to equalise the gross interest rates for loans, where the height of the entrepreneurial component and price premium would be identical (Mises 1998, p. 537-543). Nevertheless, there is yet another component – a terms-of-trade component, which occurs in the case, where the rates of prices of products and of original factors changes divergently (ibid, p. 797).

Rothbard strengthens the role of time preference in the determination of the rate of interest by the criticism of Keynesian theory, where it is considered that the interest rate determines the investment and is determined by the liquidity preference. However, subsequently it comes with a relation of a mutual determination, because practically the liquidity preference is taken by Keynesians as determined by the interest rate. Rothbard argues this mutual determination of the variables is not correct in this case.

"Demand curves are determined by utility scales, and supply curves by speculation and the stock produced by given labor and land factors, which is ultimately governed by time preferences." (ibid, p. 786)

Regarding this, Rothbard also refuses the separation of demand for money into two parts, where the first part, influenced by the transaction and precautionary motive, depends on income and the second part, influenced by speculative motive, which depends on the value of the interest rate. He claims that all influences emerge through the value scales of individuals, which are for each individual only one. Thus, the final demand is also just one and cannot be separated into two different parts.

To summarize the theory of the interest rate of the Austrian School, even though there are some representatives following the productivity approach of Böhm-Bawerk in the determination of the interest rate, for most of others, the main factor determining it is the time-preference of individuals, which further bring changes in consumption-investment decisions.

3.2. The credit expansion and its effect on the interest rate

"The appearance of periodically recurring economic crises is the necessary consequence of repeatedly renewed attempts to reduce the "natural" rates of interest on the market by means of banking policy." (Mises 2006, p. 163)

Generally, it is of a great importance to understand the causes of the cyclical fluctuations occurring in the economic system to get to the fundamental element causing the crisis. The monetary theory of the trade cycle deals with this matter. It includes a description of how the interest rates are through the credit expansion artificially lowered below the market rate. Thus, there is more money in the economy, which stimulates more entrepreneurs to the business activity. These enterprises are, however, not so competitive, because they would not get a chance to succeed in a state of the higher interest rate in absence of the credit expansion. It is the matter of

course that the limited resources available in the economy cannot satisfy the extensive demand for capital goods of all the enterprises.

It is worthwhile to emphasize these changes of the height of the interest rate influences particularly the short-term loans.

"People keep forgetting that the increase in the cost of credit - which has become known by the very misleading term, "scarcity of money"—cannot be overcome in the long run by inflationist measures. They also forget that the interest rate cannot be reduced in the long run by credit expansion. The expansion of credit always leads to higher commodity prices and quotations for foreign exchange and foreign moneys." (ibid, p. 42)

The consequences of the above mentioned credit expansion in the trade cycle first affect the prices of the factors of production as the additional issuance of money is usually used particularly for the production part – the loans are provided mainly to the producers and entrepreneurs. Then later, the prices of consumer goods are affected and there occurs the change in the purchasing power, which, through the shifts of individual's income, further influences the amount of savings and consequently the amount of the capital accumulation. This is the indirect effect of purchasing power on the interest rate. However, the increase of the wage rates generally varies from the increase of commodity prices and thus, there appears the decline of the purchasing power and it therefore results in what Mises calls "forced savings" (ibid, p. 106).

"If the distribution of income and property is modified in such a way as to increase capacity for saving, then eventually the ratio between the value of present goods and future goods must be modified in favour of the latter. In fact, one of the elements that help to determine the rate of interest, the level of the national subsistence fund, is necessarily altered by the increase of savings. The greater the fund of means of subsistence in a community, the lower the rate of interest." (Mises 1953, p. 347)

These forced savings can be made due to the tendency of increase of wage rates to lag behind the increase of goods prices, so the individuals consume less or another factor related to it is that this potential benefit of worker is gained by someone else – mostly by the entrepreneur, who saves at least part of it (Mises 2006, p. 111). Furthermore, the continuance of the credit expansion can lead to the inflation, which can induce further capital accumulation and thus further reduction of the interest rate. The concept of forced savings is discussed more in depth in Chapter 3.4.

Nevertheless, as mentioned in previous chapter, the changes of the purchasing power are expressed in the market rate of interest through the price premium. This market rate should increase after the credit expansion as the expectation of the rise of prices leads to the positive price premium due to the decline of the purchasing power. So, it is necessary to introduce another type of the interest rate – the money rate of interest. This rate is asked on loans made in money or money substitutes. It actually can be cut down to the real cost of banking transactions, which are clearly almost zero (Mises 2006, p. 108). Essentially, this is, according to the Austrian School, the value of artificially lowered interest rate.

"Certainly the actual "money interest rate" increases during the boom, but it continues to lag behind the rate which would conform to the market, i.e., the "natural interest rate[7]" augmented by the positive price premium." (ibid, p. 109)

For clarity, the natural interest rate is defined by Knut Wicksell (1962, p. 102) as the interest rate *"determined by supply and demand if no use were made of money and all lending were effected in the form of real capital goods"*. Or Hayek (2008, p. 58) simply describes it as a rate which equates the demand for loans and the supply of savings.

However, these lowered heights of the money interest rate can remain just till the exhaustion of the money issued. It is absolutely clear, why the credit expansion cannot

[7] The rate of interest in the form of earnings on investments as a result of price spreads. (Rothbard 2009, p. 441)

last for long. Then, it will again rises because the other funds available for the banks to provide the loans are of higher value and also because there are many applicants for the credit, so it is necessary to select just some of them due to the limited available amount of credit.

Thus, only with the decision to discontinue the perpetual expansion of credit in the economy and following cessation of reduction of the market interest rate, the situation of the economy changes as a result of above mentioned circumstances, which currently occur in the banking sector due to the smaller amount of the credit available for the enterprises and then consequently, the period of the crisis comes in the trade cycle.

3.3. The Great Depression

Apparently, one of the main reasons of the Great Depression was an attempt to reduce the natural rate of interest though the expansion of credit in the economy with far-reaching consequences.

"If the proportion as determined by the voluntary decisions of individuals is distorted by the creation of artificial demand, it must mean that part of the available resources is again led into a wrong direction and a definite and lasting adjustment is again postponed. And, even if the absorption of the unemployed resources were to be quickened in this way, it would only mean that the seed would already be sown for new disturbances and new crisis." (Hayek 2008, p. 375)

In the Table 3, the changes of the money supply in the United States between 1921 and 1929 are illustrated.

Table 3: Total money supply of the United States, 1921-1929 (billions of dollars)

Year (30th June)	Currency outside banks	Demand deposits adjusted	Time deposits	Total deposits adjusted and currency outside banks	Savings and loan capital	Life insurance net policy reserves	Total money supply	Present annual percentage change
1921	3,68	17,11	16,58	37,79	1,85	5,66	45,3	-
1922	3,35	18,04	17,44	39	2,08	6,08	47,16	4,1
1923	3,74	19,96	19,72	42,75	2,42	6,62	51,79	9,8
1924	3,65	19,41	21,26	44,51	2,89	7,27	54,67	5,6
1925	3,57	21,38	23,19	48,32	3,48	8,06	59,86	9,5
1926	3,6	22	24,74	50,57	4,09	8,96	63,62	6,3
1927	3,56	21,98	26,46	52,23	4,7	9,98	66,91	5,2
1928	3,62	22,26	28,53	54,68	5,39	11,05	71,12	6,3
1929	3,64	22,54	28,61	55,17	6	12,09	73,26	3,0

Source: Rothbard (2000, p. 92)

The savings and loan capital changed by 224 % and the total money supply by almost 62 % over the 8-year-period, which is, as Rothbard (2000, p. 93) denotes, high amount of inflation per year – about 7, 7 %. To compare the increase of the total amount of dollar claims (total money supply from the Table 3 minus the portion of the currency outstanding that does not constitute dollar claims against the gold reserve) and the total gold reserves, dollars increased from 44, 7 billion in June 1921 to 71, 8 billion in June 1929, whether the increase of gold reserves was from 2, 6 billion to 3 billion in the same period. This is the change of about 15 %. He then emphasizes that a huge amount of private loans and investments resulted from the credit expansion; the purchases of government securities were not represented so extensively as the increase of investments in government securities was of 1, 17 billion held by banks and -0,03 billion held by life insurance companies, so the overall increase was around 1 billion of dollars. (ibid, p. 93-95)

There is also a great opportunity to compare the Keynesian and Austrian views on the situation before the Great Depression. Keynes considers the dear money to be the principle cause, because the main increases took place in 1922-1923, then in late 1924, 1925 and 1927 and then, major rises of the money supply ended. Consequently, the

money became “more expensive”. Whether Hayek considers the main cause was the cheap money, which was supplied during the 1920s. Robert Skidelsky categorically contrasts the opinions of these two economists claiming that for Keynes, the origin of the Great Depression lies in *“saving running ahead of investment”* and for Hayek conversely in *“investment running ahead of saving”*. (ibid, p. 5)

To return to the issue of the money supply, Rothbard considers the commercial banks credit base as its most important element. To at least partly illustrate its extension, he describes its important component – reserves obliged to hold by banks. There are three possible factors causing the changes in its level (ibid, p. 96):

- a lowering in reserve requirements
- an increase in total reserves
- a using up of previously excessive reserves

The third factor is immediately passed over by Rothbard with an explanation of basically no existence of excessive reserves in that period, because banks’ endeavour was to use all the money up to the amount of reserve requirements for loans. Considering the lowering in reserve requirements, any change of them did not occur as such in 1920’s. However, there were different rates among the different types of deposits and of banks. For the demand deposits, the rate was 13 % for the Central Reserve City Banks, 10 % at Reserve City banks, and 7 % at Country banks. Regarding the time deposits, there was a 3 % rate for all banks without distinction of a specific category. After closer examination, Rothbard finds the spill over of money between demand and time deposits more significant as the other changes remain almost constant during the period.

Table 4: Demand and Time Deposits (in billions of dollars)

Date	Demand Deposits	Percentage of Total	Time Deposits	Percentage of Total
30th June, 1921	17,5	51,3	16,6	48,7
29th June, 1929	22,9	44,5	28,6	55,5
Percentage change over the period	30,9		72,3	

Source: Rothbard (2000, p. 99)

Obviously, between 1921 and 1929, a distinct change in the amount of required reserves occurred. Nevertheless, this should not be surprising due to the policy of the Federal Reserve System. Before the Federal Reserve Act in 1913, there was no interest paid on time deposits by national banks and the minimum reserve was same for both types of deposits. The establishment of the Federal Reserve System brought the interest on time deposits and required ratio of reserves was lowered to 5 % and in 1917 to 3 % (ibid, p. 95-101).

There are also other factors, which influence the changes of the commercial banks' reserves and consequently the amount of their credit as bills discounted by the Federal Reserve, money in circulation outside the banks or Treasury Currency, but explaining their effects transcends the scope of this work. Nevertheless, this outlines the view of the Austrian School on the low-interest-rate policy maintained not only by commercial banks and the Federal Reserve System, but also by the former presidents, Hoarding and Coolidge. The low-discount-rate policy was an important component of their administrations (ibid, p. 121).

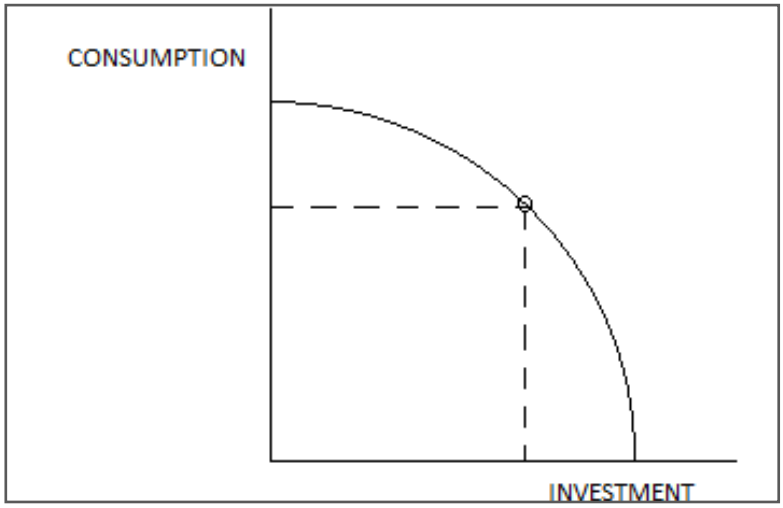
"It should be clear that the responsibility for the inflation rests upon the federal government—upon the Federal Reserve authorities primarily, and upon the Treasury and the Administration—secondarily. The United States government had sowed the wind and the American people reaped the whirlwind: the great depression." (ibid, p. 167)

4. Forced savings and Hayek's triangle

In chapter 3.2, the concept of forced savings was mentioned, particularly the Mises' view of it. Here, it will be shown from multiple perspectives and further, the consequences of credit expansion will be outlined from the view of Roger Garrison, who used a Hayek's triangle for it.

In comparison with Mises, who takes the forced savings particularly in the sense of different redistribution of wealth after the credit expansion, Hayek (2008, p. 319) defines this phenomenon as "investment in excess of voluntary savings", where the additional investment is made, even though the savings in economy do not necessarily increase at all. Generally, as the savings are made on the account of consumption (Figure 9), there comes the conflict between producer and consumer. The reason behind the increased investment is of course credit expansion made by monetary authority.

Figure 10: Production possibility frontier



Source: Garrison (2004)

Because of diminished value of money due to the credit expansion, the purchasing power of consumer decreases. This is why it is called "forced".

"This phenomenon, we are to understand, consists in an increase in capital creation at the cost of consumption, through the granting of additional credit, without voluntary

action on the part of the individuals who forgo consumption, and without their deriving any immediate benefit." (Hayek 2008, p. 118)

As mentioned previously, Mises understands it in completely different way, where actually the expression "forced savings" is used more appropriately as the savings in its true sense can really be made, whether in Hayek's concept, the savings do not have to be necessarily made. As Garrison (2004) submits, it rather corresponds to Mises' concept of malinvestment.

Hayek (1932, p.133) criticizes Keynes for neglecting the term of forced savings. *"Mr. J. M. Keynes, however, who discusses the same problem in his Treatise on Money, rejects this terminology and prefers to speak simply of investment being in excess of saving; and there is much to be said in favor of this."* However, Keynes displays the issue of the interest rate in very different way. He mentions the problem of forced savings calling it *"the sum made available by any increase in the quantity of money"*(1964, p. 183). As he perceives the assumptions of classical theory, it presumes to have "natural" rate of interest, which equates the investment and proper savings, without the forced ones, which come with the increase of quantity of money in the economy. He rejects this theory, because according to him it cannot correctly recognize the dependency of variables in the system.

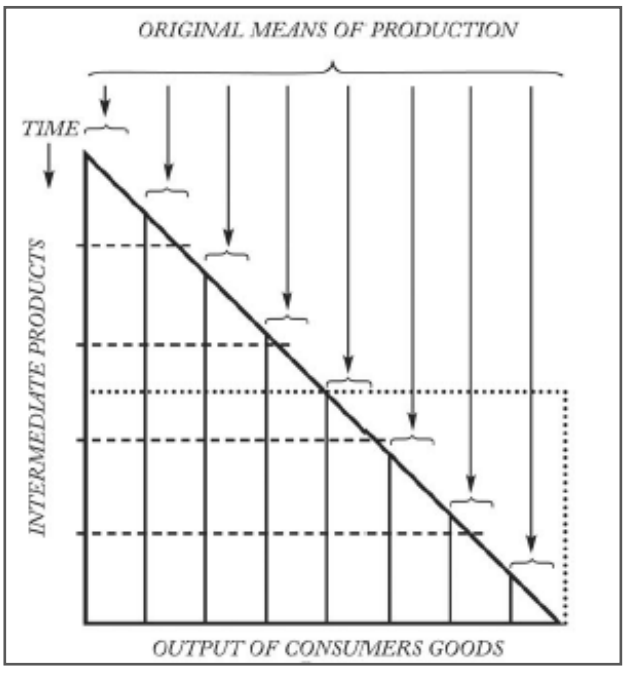
"Saving and Investment are the determinates of the system, not the determinants. They are the twin results of the system's determinants, namely, the propensity to consume, the schedule of the marginal efficiency of capital and the rate of interest. These determinants are, indeed, themselves complex and each is capable of being affected by prospective changes in the others. But they remain independent in the sense that their values cannot be inferred from one another. The traditional analysis has been aware that saving depends on income but it has overlooked the fact that income depends on investment, in such fashion that, when investment changes, income must necessarily change in just that degree which is necessary to make the change in saving equal to the change in investment."(ibid, p. 183-184)

Even though the views of all three theories about this issue greatly differ, it shows, how problematic the failure of the identity (rather than equilibrium) S=I can be perceived.

Garrison (2004, p. 330-331) mentions, that in few cases, Mises uses the concept of forced savings differently from the sense of redistribution of wealth in the economy, but rather it relates to overconsumption. To explain it, demand for consumer goods increases through the boom, but at the end, supply of it decreases, because producers' investments and consequent yield and output decrease. Therefore, they increase the prices of consumer goods and with subsequent scarcity of the resources for their further investments, it leads to the increase of the interest rate, consumers start to save more. This concept of forced savings is not used by Hayek as he refuses the overconsumption and claims (2008, p. 293) that consumers rather have to abstain from the consumption.

To describe the notion and the consequences of overconsumption, the Hayekian triangle is used.

Figure 11: Hayekian triangle

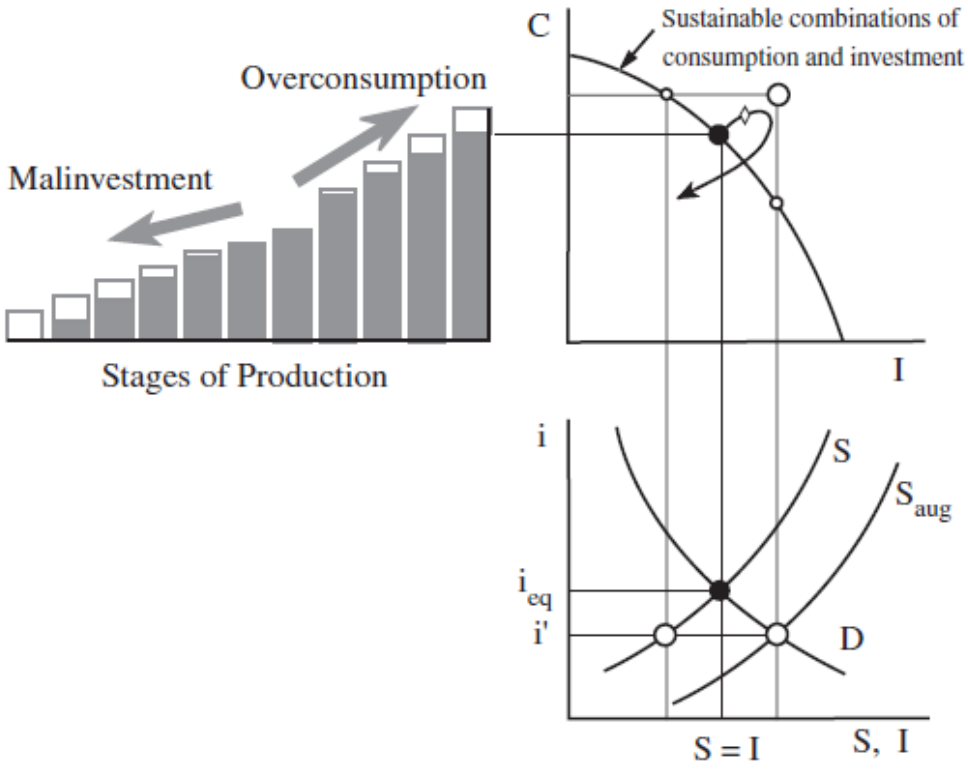


Source: Hayek (2008, p. 228)

It shows the amount of intermediate products in each stages of production necessary to get the final output of consumer goods. Apparently, the proportion between the area of triangle and the amount of final output would rise only with lengthening the process of production (Hayek 2008, p. 229-230).

Garrison (2004, p. 335) outlines the above described concept of overconsumption: *"..., we can envision a pattern of reallocation in which both early and late stages get increased allocations at the expense of middle stages."* In relation with the malinvestment, consequences of the credit expansion are visible in Figure 12.

Figure 12: The Dynamics of Credit Expansion

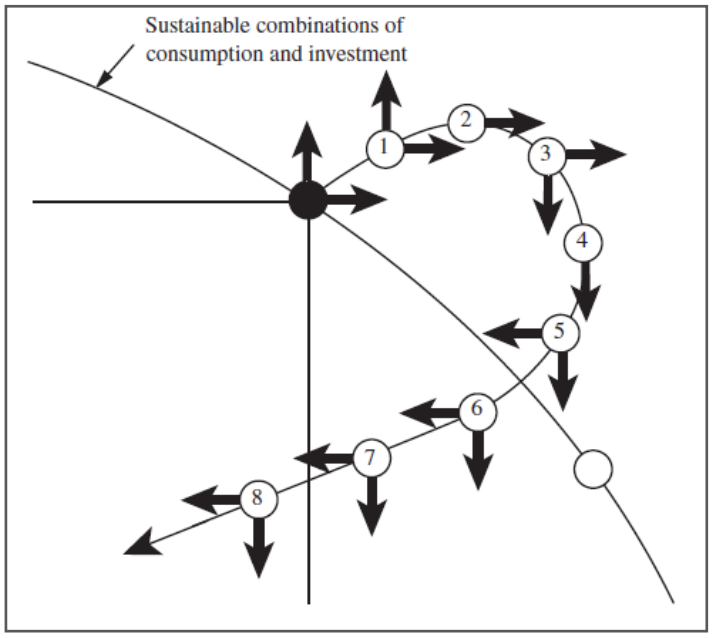


Source: Garrison (2004, p. 328)

In absence of credit expansion, the shift of the supply curve of the loan able funds to the right would mean the decrease in the interest rate and increase in both savings and investment. However, in Figure 6, the shift of the augmented supply curve has the same effect on the interest rate and investment, but savings of public decrease due to

the lower interest rate. So, the resulting effect of this situation is that both investment and consumption increase. It leads to the distortion of the Hayekian triangle, because on one side the entrepreneurs invest to their new projects and lengthening the process of production and on the other side, consumers have money, so they spend more on consumption goods. Both of these facts respond to malinvestment and overconsumption, respectively. It is obvious that firstly, how the investment and consumption increase, the economy goes beyond the PPF and then it returns to it and decreases even lower inside of the PPF (ibid, p.338-339).

Figure 13: Boom and Bust by numbers



Source: Garrison (2004, p. 340)

The consequent phases of boom and bust marked by numbers are described by Garrison (ibid, p. 340-341) as follows:

(1) Both overconsumption and overinvestment take place.

(2) Overconsumption reaches it maximum level and overinvestment continues to rise.

(3) Forced savings emerges in the sense of overconsumption.

(4) Overinvestment reaches it maximum level.

(5) The continuance of forced savings, subsequently, the demand for liquidity begins to increase.
(6) (7) (8) The levels of consumption and investment continue to fall, eve below the PPF.

However, the full recovery to the initial equilibrium of market does not occur due to the misallocations of resources in time of boom.

This is the Garrison's interpretation of the view of Austrian School on the consequences of credit expansion. The different views on forced savings are also summarized here as Hayek understands it through the change of purchasing power occurred due to the increased quantity of money in the economy, so actually, people do not save more. Whereas Mises takes it rather as a redistribution of wealth between different agents in the economy and it relates to the overconsumption. To completely perceive this part of the theory of Austrian School, it is important to distinguish between malinvestment and overinvestment. Larry Sachrest (2006, p. 33-34) defines these two phenomena: *"Malinvestment occurs due to misleading relative price signals, and it necessitates a corrective contraction"*, whereas *"the overinvestment occurs because entrepreneurs are led to believe that the subsistence fund is larger than it actually is."*

IV. COMPARISON

In this chapter, the discussion of all three schools will be provided. It is followed by the testing of hypotheses and finally the comparison of views of theories towards negative interest rate brings the outlook on present time.

1. Discussion

Following chapter compares the views of all schools of the interest rate, its relation to the Great Depression, and also their consistency with the assumptions of the each school's theory. Then, the discussion of their correspondence to the facts occurred in period under review is provided.

Firstly, according to Keynesians, the interest rate is determined through the liquidity preference, which represents the demand for cash. They reject the role of the interest rate as to equalize savings and investment as they are two separate processes determined mainly by income and expectations, beyond the interest rate. These opinions largely correspond to their general theory, which is hugely focused on the demand-side of the economy.

Keynes finds the interest rate in the period before the Great Depression as very high, which discourages the volume of investment. He suggests lowering it, which according to his theory would discourage savings and stimulate investments through the increase of the marginal efficiency of capital. As mentioned in Chapter III. 1.1., he considers the interest rate and the marginal efficiency of capital as two separate variables determining the amount of savings[8] and investment, respectively. However, he thinks that the former variables are kept equal through the amount of investment and the role of the savings is completely neglected in this process. This fact to large extent approves the criticism of Keynes by Austrian theory, that savings and investments are highly related and it is not possible to encourage one while discouraging the other (Rothbard 2000, p. 38). And even though this seems logical, because huge part of the

[8] More precisely, the amount of hoardings must be subtracted from savings to get the correct amount.

source of investments comes from public savings, in this case, I see it as a misinterpretation of Keynes, who would rather mean to discourage hoardings as a part of savings.

Between years 1933 and 1938, the New Deal was enacted in the United States as a remedy for economy to recover from the Great Depression. Beyond other things, it accepted the three main Keynes' recommendations of how to get out of the depression.

- reduction of the interest to encourage private investment
- progressive tax system to redistribute the wealth
- in case of insufficient private investment, government should supplement them by public investment to maintain a level of aggregate expenditure corresponding to full employment[9]

Regarding the first recommendation, the interest rates were on the lowest levels during 1930s. However, it did not largely alleviate the severity or reduce the duration of the Great Depression.

The reason behind the second recommendation comes from the assumption of the Keynesian theory, that higher income causes higher amount of savings.

The last one was not actually applied in a large extent as Roosevelt never intended to utilize deficit spending and wanted to keep the budget balanced. This point is really problematic, because increased deficit spending can create or increase the inflation and it will require increased taxation in the future. Furthermore, it is arguable, as borrowing can increase the interest rates, which contradicts the first recommendation, and hypothetically, it can also decrease the amount of credit available for loans, and thus, it causes further decrease of the private investment. Nevertheless, the main point is to increase consumption, so the excessive savings would be absorbed and it would not reduce the marginal efficiency of capital.

[9] http://www.adamsmith.org/research/think-pieces/review-keynes-hayek-the-clash-that-defined-modern-economics/

Altogether, Keynesian theory hugely differs from other two as, firstly, they defend the decline of the interest rate through the increased quantity of money, so they do not accuse the Federal Reserve System from primarily causing the depression, at least in not as large extent as Monetarists and Austrians do. However, regarding his opinion about providing cheap money, it has changed to large extent, while reconsidering the amount of inflation. Secondly, they find the government intervention into the market as necessary for its regulation and it should be conducted through the expenditures.

Conversely, Monetarists think that market should be left to balance itself and only money supply should be watched over. They blame the Federal Reserve System for not fulfilling its duties. However, they do not find him as a cause of the Great Depression, but rather a passive spectator, who is obliged to prevent the recession turn into depression and does not behave according to it.

Firstly, after 1928, the Federal Reserve System asserted the real bills doctrine and did not provide enough money to commercial banks and moreover, in 1931, it increased the discount rate, so it was even worse for banks to obtain liquidity. The demand of people to hold more money than the FED supplied led the consumption to decrease further. Secondly, they criticizes it for larger focus on price-level stability than on money supply, when the FED was not established mainly for stabilizing price level, but to work as a lender of last resort and prevent the bank panics.

On the other hand, Monetarists believe, that the money supply can change the demand for money in a short-run, but in a long-run the change is diminished, because people expect inflation to rise. This further leads to higher nominal interest rates. Their anti-inflationary policies were a subject of huge criticism in 1980s.

To sum it up, Monetarist theory do not explain the role of the interest rate in Great Depression very much, because according to them, it is the endogenous variable determined by the money supply. They are so focused on the targeting of money supply, that they hugely neglect the role of private agents in the process of crisis.

Although they do not refuse the role of public, it is taken as a regular part of the economic system without precise analyzing of the changes in its behaviour. This can be explained by the assumption of Monetarist theory, that behaviour of private sector is essentially stable in absence of government intervention. Nevertheless, it explains particularly the depth and duration of the Great Depression and does not give an attention to the reason of actual occurrence of the crisis.

Finally, the Austrian School explained the cause of the Great Depression by the expansionary monetary policy, which led to huge increase of the money supply during 1921 and 1929. Thus, the monetary interest rate differed from the natural one and, because it was not established naturally by time preferences of individuals, but wrongly through the intervention of monetary authority, part of available resources in the economy led into wrong direction. So this process created wrong estimations of individuals about their future profits from the individual investments and caused the malinvestment, as there were not enough resources for all the investors.

In this point, there is a huge difference between Keynes and Hayek, who claimed that the investment exceeded the savings during the examined period, whereas Keynes understood it vice versa. For Austrians, the cheap money provided in 1920s with consequent low interest rates created exaggerated expectations, while Keynes again conversely, found the interest rates very high and so called for cheap money. However, it could not be said that just one of them was right. Each of these theories considered the different periods of time. While Austrians considered the period about from 1922 till 1927, when the additional credit was provided, while Keynesians considered the years 1928 and 1929, when the extension of credit ceased. Actually, the 1920s were led by former presidents under low interest rate policy administration.

Austrian theory assumes that market forces without interventions lead to general equilibrium. Therefore, it completely refuses the role of national bank in the contemporary economy and consistently, it blames the FED for causing the Great Depression. However, in opposite to Monetarists, Austrians argued that the FED

intervened too much, so that according to their monetary theory of the trade cycle, the overall system did not correspond to the situation on market, which would be otherwise determined by individual preferences, and therefore the boom was destined to end up into the bust.

The Austrian theory has a logical and consistent concept of explaining individual events before the Great Depression. However, they are criticized for not explaining the depth and severity of it. One possible reason can be they find the boom period as the part of the business cycle, which should be examined and focused on, because the bust is only its negative consequence, when the economy is recovering. Apparently, this is completely opposite to the Monetarist theory.

Other criticized field of their theory is the assumption, that most investors are regularly fooled by the monetary authority and consider the low interest rate as the right one. When they suppose, that free market leads to equilibrium on its own, they should not underestimate the agents and assume that investors perceive, that the interest rate is artificially lowered, take it into consideration and then, they either make investments profitable even in the case of high interest rate or abstain from investments, which would be profitable only with low rate of interest. On the other side, the assumption of general awareness about the policies of monetary authority is actually unrealistic.

The Austrian theory uses particularly verbal logic to explain individual phenomena in the economy and it is highly criticized for it, as its reasoning is not supported by adequate empirical evidence and many of Austrians' explanations are not observable. In this work, it is apparent on the concept of originary interest rate. They argue, that statistical methods do not sufficiently explain necessary relevance and position of the economy in time.

As the process of bust is not emphasized with subsequent assumption of self-correction of market, Austrian theory suggested letting economy naturally solve the

wrong allocation of resources in previous period and attain new equilibrium. Because of the huge increase of the demand for consumer goods in boom, necessary cure for it is decreased demand in bust (Hayek 2008, p. 323). However, New Deal was definitely not build on this suggestion.

There are two other possible disputes with the Austrian theory. Firstly, considering the Garrison's interpretation of the Hayekian triangle, Ryska (2008) claimed, that Hayekian triangle and the graph of the capital market represent the nominal distribution of money, while the production possibility frontier represents the real feature of the market. So, their mixing up together can be confusing.

Secondly, it is worth to analyze the consequences of increase of money supply on the price-level during 1920s. As can be seen in the Figure 3, the rate of inflation did not largely fluctuate in examined period, which is not consistent with the Austrian theory of huge credit expansion. However, Austrians were aware of the stable price level. Rothbard (2008) argued, that considering the technological innovation during early twenties, it followed, that in opposite, there should have been distinct decrease of the price level, but according to him, it was offset by increased productivity. Instead of Consumer Price Index or Index of Wholesale Prices, he further recommended analyzing the fluctuations of Snyder Index of General Price Level[10], which changed by 13% from 1922 till 1929 (2008, p. 170).

2. Hypothesis testing

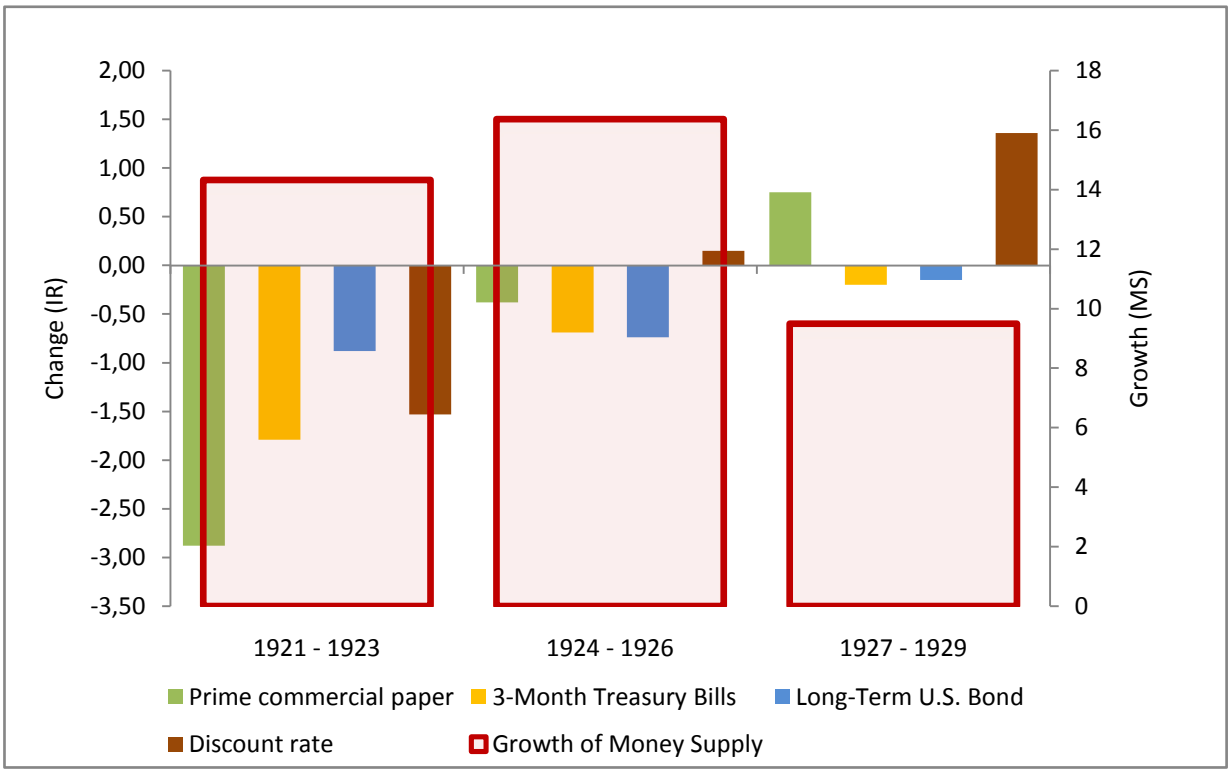
Further part of work deals with the two hypothesis:

1) Values of interest rates were determined largely by increasing quantity of money in the economy.
2) Credit expansion and subsequent investment activity were not proportional to the growth of economy.

[10] It included all types of prices - real estate, stocks, rents, wage rates, and also wholesale prices. (Rothbard 2008, p. 170)

The first hypothesis assumed that the increased growth of money supply during 1920s significantly affected the value of interest rate, more concretely it caused the decrease of interest rate. It was not determined by supply and demand on capital market, therefore there occurred significant imbalance leading to Great Depression. The subject of examination is therefore the relation between various types of interest rate and growth of money supply.

Figure 14: Changes of interest rates, Growth of Money Supply



Source: Author's computation based on the same data as for Figure 4, Figure 5 and Table 3.

In Figure 14, the left axis shows the changes in interest rates and the right axis shows the percentage growth of money. The changes in interest rates are computed as follows:

$$\Delta i = i_L - i_F$$

where i_F is the corresponding rate for former year and i_L is the same for latter year. Further, the computation of percentage growth of money supply is following:

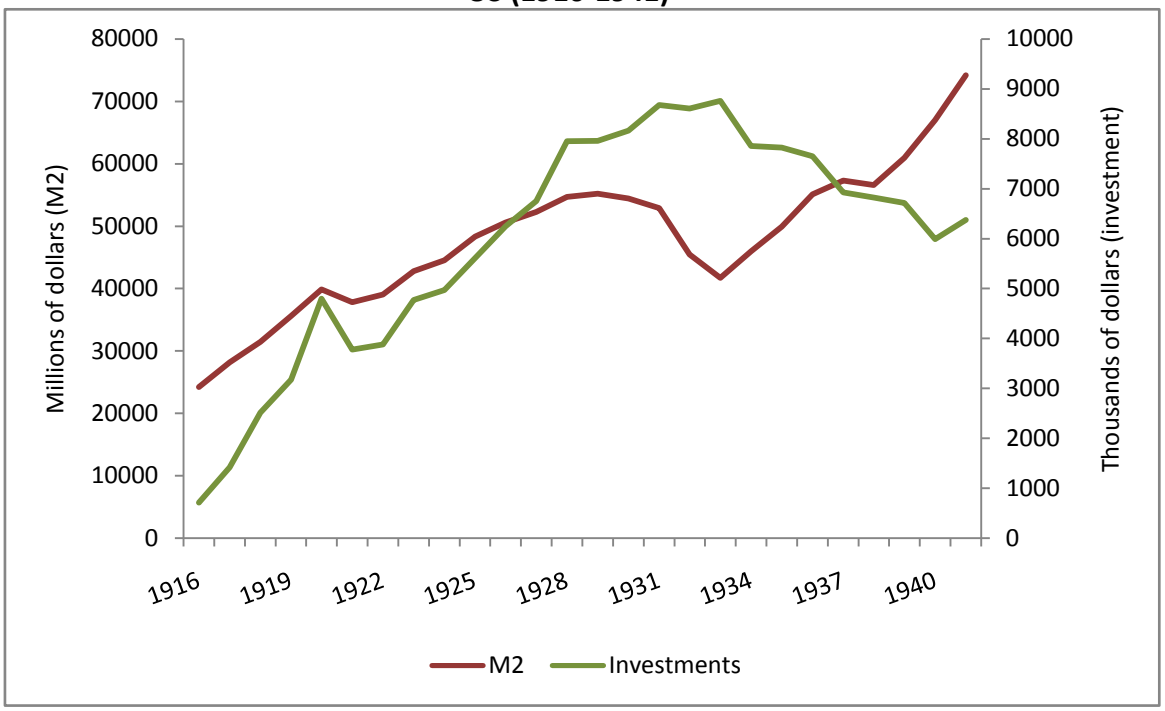
$$\Delta MS = \frac{MS_L - MS_F}{MS_F} * 100$$

where MS_F is total money supply for former year and MS_L is the same for latter year. In first period, ΔMS was 14, 32 % and subsequently, all rates significantly decreased. The largest decrease of 2, 88 percentage points occurred in yield on Prime Commercial Paper. In second period, ΔMS was about 16, 37 % and all rates except discount rate again decreased. However, the changes were smaller than in previous period. In last period, ΔMS was only 9, 5 % and yield on Prime Commercial Paper of about 0, 75 percentage point. The increase of Discount Rate was more significant.

In conclusion, from Figure 4, the huge increase of interest rate in 1928 is visible and with subsequent smaller growth of money supply in later 1920s, it shows the inverse relationship between the growth of money supply and interest rates. It proves the first hypothesis to large extent, despite of other possible influences of interest rate on the capital market as investment or savings.

The second hypothesis is based on the Austrian theory, which assumes that increase of money supply in earlier part of boom encourages the investment activity to rise. This is achieved by lowered interest rates. The purpose is to compare the increase in money supply and in investment with the growth of the gross domestic product level to see, if their growth corresponds to the growth of economy.

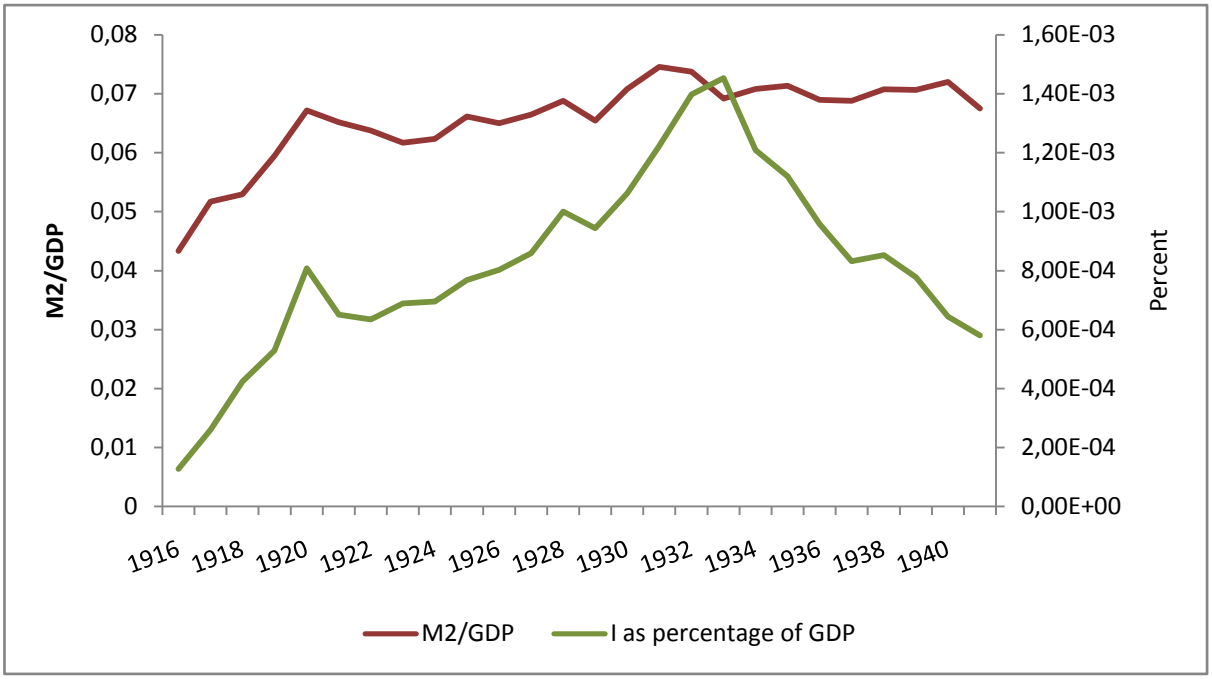
Figure 15: M2, Investments of Medium Sized and Small Manufacturing Companies in US (1916-1941)



Source: M2 retrieved from Banking and Monetary Statistics (Table No. 9), Investments retrieved from FRED

In Figure 12, the changes of M2 can be seen. Apparently, it was continually increasing from the time of World War I until second part 1929, except the years 1920-1922, which was a period of recession. Then, it was slowly decreasing until 1931, when the steep decrease took place until the second part of 1933. After that, it was again increasing till the World War II. The second variable, analyzed in the Figure 12 are investments held by medium sized and small manufacturing companies in the United States. This indicator is chosen due to the assumption of Austrian theory, that firstly, the prices of factors of production are affected. Until 1928, its behaviour was very similar to processing of M2, except its decline in 1920 was much sharper. Its growth was faster, until late 1927, when the rate of growth highly declined. However, the investments itself did not decreased until 1933, when it was hit by continual decline until World War II. This process of both indicators is consistent with the Austrian theory. However, the aim is to compare them with the GDP level.

Figure 16: Proportion of M2 to GDP and Investment as percentage of GDP



Source: GDP retrieved from Groningen Growth and Development Centre, M2 and Investment – same as for Figure 15

Apparently, from the Figure 16, the growth of investments was considerably higher than the growth of GDP. This corresponds to assumptions. However, its behaviour between years 1929 and 1933 was different from what could be expected. The steep increase could be explained by the higher decrease of GDP than of investments in earlier part of depression. From 1933, predictably, it started to decrease and this downward movement lasted until 1940s. Regarding the proportion of M2 to GDP, its development is not as obvious as in case of investments. Even though the growth of M2 was higher than the growth of GDP during 1920s, the process of both indicators more or less corresponded to each other.

In conclusion, the second hypothesis definitely cannot be rejected. However, the growth of both examined indicators was not as high as expected.

3. Negative Interest Rates

Recently, the central banks of several European countries [11]have started to use negative interest rates to limit the amount of hoardings of the commercial banks at central bank, so they would rather provide loans to private sector. Another reason is also to prevent deflation. Following this, it would be worth to compare the views of individual schools toward the negative rate of interest.

Even though Keynes (1964, p. 168) argues that "the interest rate is never negative", the assumptions of this theory do not refuse the negative interest rate. He further claims that the negative rates cannot be appropriate because it would tend to create money substitutes (Suntum 2009, p. 3). However, as Mankiw (2009) points out, Keynes approves the tax on holding money suggested by Silvio Gasell and Keynesians generally take it as a good tool to encourage private investments in time of crisis, eventually when economy is in liquidity trap. Despite of the awareness of the problem, that no one would lend money in that case, Mankiw (2009) is not again the policy of negative interest rates. *"Early mathematicians thought that the idea of negative numbers was absurd. Today, these numbers are commonplace."*

Similarly, as Monetarists are generally proponents of low interest rate policy, because its high values mark high inflation, they do not refuse the concept of negative interest rates. Recently, Bernanke (2015) claimed: *"If the returns to capital today are very low, then the real interest rate needed to achieve full employment (the equilibrium real interest rate) will likely also be very low, possibly negative. The recent pattern of slow economic growth, low inflation, and low real interest rates (see below) motivates and is consistent with the secular stagnation hypothesis."*

Conversely, Austrians completely refuse negative interest rate. They argue, that originary interest rate can never be negative due to positive time preferences people have. They admit them only in the case, when central bank intervenes into the market

[11] For example the central bank of Sweden, Denmark, Switzerland and also the European Central Bank.

and fixes the amount of market interest rate (Polleit 2015). For example when deflation is expected, it is possible to have negative interest rates. However, it is definitely not free market equilibrium.

V. CONCLUSION

The Great Depression was a terrible time of American as well as worldwide history. There were many facts and wrong decisions during 1920s and 1930s, which, while combined, resulted into such severe and long-term depression. One of these decisions was the policy of low interest rates. The attempt of this thesis was to show various perspectives on the correctness of this policy.

Within the first part of this thesis, the review of Keynesians, Monetarists and Austrians perception of the interest rates during 1920s were expounded. It outlines, how deeply individual schools differ. While Keynesians considered the dear money and increased interest rates in the end of 1920s as the main cause of the crisis and suggested keeping them on low level, Austrians promptly refused the policy of low interest rates and blamed the Federal Reserve System of excessive and groundless expansion of credit in the economy. Monetarists also considered the FED as a main source of the problems occurred in 1930s, but they had a completely different opinion as they said that FED's activity was not sufficient. Their suggestion towards interest rate is similar to the Keynesians' one.

The discussion in the second part of thesis analysed the strengths and weakness of individual theories. Even though, the Keynesian explanations of the Great Depression can be in many aspects consistent with reality, their recommendations to relieve the depression were not actually useful in 1930s. The suggestions of two other schools were not applied during the depression, so their validity cannot be reliably expounded. Basically, both of them suggested letting market itself to reach a new equilibrium. Monetarists additionally propose constant and predictable rate of growth of the money supply. This apply despite of huge difference in perception of causes of the Great Depression by these two schools, as Austrians see the main causes come out from the period of boom, while Monetarists conversely consider a bust period as the main source of problems.

In further part, the hypotheses based on the assumptions of Austrian School were tested. The first hypothesis analysed the relation between money supply and the interest rates during 1920s and it showed, that with increasing supply of money, there were significant decreases in the yields of Prime Commercial Paper and in the yields of both government bond, of 3-Month Treasury Bills as well as of Long-Term U.S. Government bonds. With the reduction of growth of money supply, some of these interest rates started to increase. The second hypothesis analyzed the proportion of money supply and then of investments to the gross domestic product. This hypothesis was not rejected as both of these proportions tended to rise over the examined period. However, the rate of growth of money supply was expected to be much higher. Even so, these results distinctively approve the assumption of the Austrian School.

Possible extension of this work can be a closer analysis of the fluctuations of the interest rates before the Great Depression, to provide complete evidence of motives to its changing. This would further prove or reject the explanations of the Austrian Theory.

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