Bachelor thesis

Complementary currencies – way to stabilize the economic system

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1. Introduction

1.1 General look at the current economic system

Many people would possibly agree that we are living in a very complex world where the economy itself constitutes a major portion of the complexity. Nowadays the economy is not only complex but also unstable and is covered with uncertainty. According to the World Bank estimates there were around 96 major banking crises and 178 monetary crises over past 25 years (Lietaer & Hallsmith, 2011, p. 33). The most recent crisis which happened in 2008 is still present and nobody knows how long it will last. Because of so many crises, economic system's uncertainty was argued and studied by Hans - Walter Lorenz (1995) in his work called "Nonlinear dynamical economics and chaotic motion". System's uncertainty is also addressed by Wei-Bin Zhang (2002) in "Theory of complex systems and economic dynamics" and in addition to that Olivier Blanchard also found uncertainty effects of the fiscal and monetary policy on the economic system in his work called "Macroeconomics". Therefore based on the past experience and on the amount of the literature dedicated to solving economic problems one could obviously recognize the need for the stability in current economic system. This need is usually passed to the state's government which represent servant of the public interest. However short-term focus of the government actions leads only to the temporal improvements and involves major costs to the taxpayers. Most common methods to stabilize the monetary system in the years of crisis are by bailing out the banks (estimated cost of 12.8 trillion in US (Stewart, 2010)), in order to keep required level of liquidity, and public spending cuts, in order to lower debt pressure on the budget. On the global scale government actions don't differ much across the countries, so as one could notice, this limited number of tools and decisions result in a heavy tax burden on citizens, even though all the resources are spend to save private banking sector. Off course it could be even worse if banks would default. So, is there anything else that could be done? Actually, there is one tool which exists in the world but has not been noticed by the academic society until very recently. It is called complementary currencies.

1.2 Fundamentals of the complementary currencies

Bernard Lietaer is world widely recognized as the main promoter and the researcher of the complementary currency systems. According to Lietaer the main purpose of CC (this abbreviation for complementary currencies will be used throughout the paper) is to link underutilized resources with unmet needs. Generally one could think of such a system as a complementary economy operating on the side of the conventional economy and supporting it by stimulating additional transactions between the agents. In order to expand ones understanding of the current phenomena I would briefly list some examples of unmet needs and underutilized resources which were introduced in Bernad Lietaer's "Creating Wealth" (2011). Unmet needs might include:

- Social needs (elderly care or youth mentoring)
- Economic needs (employment)
- Commercial needs (supporting and fostering local businesses)
- Ecological, cultural or educational needs (supporting local non-profit organization, community or regional identity building)

Underutilized resources might include:

- Any unemployed person who is willing and able to do something
- Unused seats, tables in local public places
- Public building which are closed during some time in a year
- College, university or vocational courses
- Non-profit organizations which have people ready to do something if supplies are provided (Lietaer & Hallsmith, 2011)

One can notice that CC system includes most things which conventional economy doesn't use or just doesn't take into consideration. Especially in times of the recession, when unemployment is increased in most countries, due to lower output and decreased

consumption, those unemployed people become the greatest underutilized resource which community can use to benefit from.

1.3 CC systems place in the main economy

It could be said that the current modern economy is highly focused on the production and the consumption cycle. Most focus is put on increasing wealth through the production and sales of goods and services. Most companies strive for the efficient work where low cost and high sales are the major driving force. According to Lietaer (2001) “our economy would be more resilient to big changes if there were more diversity in the ways we make exchanges, store value and keep our accounts”. This need for diversity was also recognized by ecological economist Wei – Bin Zhang who stated: “we are in an era of high economic complexity. This implies that economic decisions have to be made within a large context in which internal structures of each subsystem and connections of different subsystems have to be taken into account within a genuinely dynamic framework. The raising of children, lower and higher education, family structure, and family values are all connected in a subtle and complicated way in economic networks” (Zhang, 2002, p. 88). However current economy excludes some of these subsystems as a subject of consideration even though the effects of the excluded parts are unambiguously important. Therefore the role of the CC system is to foster the additional subsystems and thus increase diversity which would make whole economy more resilient to the shocks. B.Lietaer (2001) lists the six most important community systems which could be targeted by the complementary currencies. It is social systems, economics and environment, built environment and infrastructure, governance, human development and natural environment (Lietaer & Hallsmith, 2011). Off course each of them consist of even smaller subsystems however there isn’t any need to list them in order to reader to comprise the big picture. To conclude, CC system’s role is to support economic and social subsystems in order to foster general diversity and thus make economy more resilient to the shocks.

2. Problem statement

As discussed above, there is a major uncertainty involved in the economic system. In other words, there are very little chances to predict were the economy will move next and what values economic variables will embrace (Blanchard, 2003). Thus, the best what government and citizens could do is to secure all possible stabilization methods. Therefore, the main priority of this paper is to show and explain how the CC system could be used to help community during the economic downturns. As complementary currencies remain very marginal nowadays, this paper will try to increase awareness in an academic society, in order to encourage further researches in the future. And finally, I will make effort to show that such innovative tools could be implemented wherever it is needed if government and people are ready to take actions.

All these aims will be reached by the making appropriate sections in the thesis and thus comprising general understanding and clarifying underlying problems. First of all, I will present the reader with possible theory, in order to describe the current monetary and economic system and to deepen knowledge about the CC. This theoretical section is expected to address major mechanics in modern economics and try to incorporate CC system effects on the general mechanism. I will try to provide reader with both microeconomic and macroeconomic view of the economy. It is crucial show, that the complementary economy might have relevant effects on the general economy and support it when needed. According to Zhang, “The subsystems such as ecological, economic and social subsystems, which could be once decomposable as separate element in analyzing the social system at least in short terms over a homogenous space, have to be treated as a part of the whole system” (Zhang, 2002, p. 87).

The second part of the paper will be devoted to make descriptions of existing CC systems in the real world. Because it is important to show the reader, that this tool is not just an idea, but that it is existing phenomenon in the world. I will emphasize crucial attributes of the community

currency systems and I will try to combine theory behind it. This section will also reflect on difficulties, advantages and disadvantages which CC system can bring to the society.

Third part is a practical project. This project will present idea of implementing some CC system solutions in Denmark. This section will describe complementary system's mechanism. Also, I will try to analyze the proposed model from the different perspectives of the actors. In addition, that I discuss cost recovery mechanisms and argue that Denmark has favorable attributes as a country to implement such project. Finally, general conclusion will end this thesis by summarizing everything that was discussed and addressing the main issues.

2.1 Notions

Notions of community currencies, complementary currencies and CC will be used interchangeably in the paper as their meaning is basically the same.

Also, local economic development will sometimes be shortened to LED.

3. Review of the theory

3.1 Introduction

In this section, I will present some theoretical concepts from the different fields of science. I will begin with the basic functions of money and money mechanics. Furthermore, I will try to discuss community currency principles in this perspective. I will also list the type of the complementary currency systems. This first part is expected to introduce the reader with the original money functions and prepare him/her to the following theoretical discussion. The second part will look at general economic system and its structure, or more precisely, how money flows in the system. It expected to bring reader some new insights from quite different perspective, as it is not a mainstream economic view. The last theoretical part will put more

focus on the CC design or in other words, its unique attribute of the negative interest rate and its effect on the general economy.

3.2 CC types and basic money functions

This part of the paper will describe complementary currencies in a more detail in order to provide the reader with a general framework within which CC operates. Furthermore, basic money functions will be discussed in a context of a conventional money and community currencies.

There are three archetypes of the community currencies: the backed currency, the fiat currency and the mutual exchange system (Schraven, 2001, p. 3). Backed currencies are directly backed and can be exchanged at a fixed fee for, either real goods or conventional money (Schraven, 2001, p. 3). Fiat currencies are not backed by the real goods and thus are similar to conventional currencies. Ithaca hours is an example of such type of CC, where unique bills are issued which are backed in terms of labor hours (Schraven, 2001, pp. 6-7). However fiat currencies constitute some disadvantages in its design. For example, difficulty of comparing real and complementary prices, difficulty in establishing credibility of such a system and such a type of CC will require more maintenance and consequently involve larger cost. Last type of community currencies is a mutual credit system. This kind of system operates without initial cash stock. The participant of this system debit or credit their accounts depending on the actions they undertake. Support medium could be labor hours or even some kind of a fixed rate in terms of the conventional money. The best attribute of such type of CC is that participants define supply of money by their quantity of transactions, but on the other hand there are some issues with opportunism, because some persons with negative account balance might leave system intentionally. More detail will be provided when the real world examples of LETS and WIR will be described later on in this paper.

According to the standard economic theory, there are three most important functions of money: standard of value, medium of exchange and store of value (Lietaer & Hallsmith, 2011, p. 226). Standard of value enables people to compare prices of different goods. Conventional money is usually used to accomplish this function whereas complementary currency has an option to choose not to undertake the standard of value. Otherwise, if complementary currency takes other types (e.g. if it's fiat currency or mutual credit system), it is feasible to express value of goods in CC. Second function, undertaken by money, is a medium of exchange. This function is of special importance for CC (Lietaer & Hallsmith, 2011), because the whole idea behind this alternative system is to facilitate exchanges between the economic agents as much as possible. Finally, the last money function is a store of value. Conventional money is also used to undertake this function; however it may not be desirable to have community currency as a store of value especially if one wants to increase transactions in the local economy. For this reason, demurrage fee is charged (negative interest rate) or CC systems operate under 0% interest rate. The fact that currency will lose some of its value encourages its holders to spend it faster and make long-term investments, in order to ensure positive cash flow in a form of dividends in the future.

This short introduction to community currencies and money functions should have hopefully formed basic insights about CC types and possibilities of its use. In the following section I would like to look at the community currency system through the local economic development perspective.

3.3 Local economic development

Nowadays globalization has made the world a lot more integrated than it was before capital market liberalization. Globalization meant that economies of the countries have become more interrelated, which means that there cannot be a major downturn in one large country without implications for every other country (Stiglitz, 2009, p. 1). That's what the 2007 credit crisis was about when "toxic" financial derivatives of the US were distributed throughout the world and,

therefore, mistakes of one country made suffer all other countries in the world. For this reason it is important to stabilize economic system and maintain social protection (Stiglitz, 2009, p. 13). One of the main social problems was and is unemployment. According to World Bank unemployment in US raised from 4.6% in 2007 to 9.3% in 2009 (World Bank, 2009). In addition, unemployment is associated with a variety of problems and pathologies, from higher divorce rates, higher suicide rates to higher incidences of alcoholism (Stiglitz, 2002, p. 9). Therefore, I would suggest focusing more on a social and economic development and making noticeable changes in the society (Stiglitz, 2002, p. 27).

Local economic development isn't a new thing, but it was just recently recognized by politicians and economists (Birkhölzer, 2005, p. 2). In economics there are two perspectives, one of which is studied in microeconomics where focus is put on the enterprise, and other is studied in macroeconomics where national and global economy is of major concern. In this view enterprises interact directly with the national and the global economy disregarding relationship with communities, localities and regions (Birkhölzer, 2005, p. 2). For this reason local community development was stressed by some researchers as a possible way of improving economic and social well-being (Clark, Huxley, & Mountford, 2010), (Duraiappah, 2000) (Annen, 2003) (Pacione, 1997). According to Stiglitz (2002) "the purpose of economic activity is to increase well-being of individuals, and economics structures that are able to do so are more desirable than those that do not". As was mentioned above and will be discussed in even greater detail, community currencies are able to provide this economic structure by simply linking unmet needs with underutilized resources, however, in order to fully cover and introduce this phenomena I recognize the need to list six basic principles of local economic development proposed by Karl Birkhölzer (2005) which lies the fundamentals of the philosophy behind the local economics.

1. For the common good. Local economic initiatives (may appear in a form of initiative group) understand their community like an enterprise or company as a coherent and independent economic system whose objectives are not individual aims, but what is called "social profit", "community benefit", or "for the common good".

2. An integrated holistic approach. The second principle is an integrated or holistic understanding of the terms “economy” or “economic”. It includes not only the production of goods and services, but also the reproduction sphere of environmental, social and cultural activities. Revitalizing the reproductive capacity must therefore be the first and overall objective of the Local Economic Development.

3. Serving unmet needs. A third principle is a shift of paradigm about the final aim of all economic activities which it is definitely not about making money. Money in the end of transactions is not value in itself, but only a means of exchange. Therefore, all economic activity should be finally about serving needs which constitute a true value. Most economic policy nowadays is dominated by a so – called “supply-side” approach, which means that most focus is put on the aspect of marketing the produced goods and services in the most profitable way, while others with no or even lesser profitability should be left aside or removed from the market. Local Economic Development instead focus on the “demand – side” especially by identifying and serving the so – called “unmet” needs, which is the biggest untapped potential of new sources of income at the local or regional level.

4. Re – establishing local economic cycles. To improve functioning of local economic cycle, money should circulate within the local community as much as possible and as a rule each dollar, euro or mark should circulate at least three times within the community before it leaks out again. If real money is not used or any equivalent, it is the investment and exchange of working time which constitutes the local economic cycle and keeps it in motion. If conventional money is in deficit (i.e. during the credit crisis) and credit from the banks is not possible it is possible to make transactions only using mutual credit (Stiglitz, 1989), for example, using LETS (local exchange transactions system) system (Schraven, 2001) (Birkhölzer, 2005, p. 8). In addition, in some situations re –establishment of local economic cycles will require voluntary work in a form of future investment for a common good (Birkhölzer, 2005, pp. 4-5, 7, 9) therefore community actors should be clearly explained the principles above.

5. Building and improving social capital. The most important resources are the capacity of the people, its knowledge and abilities. LED (or Local Economic Development) is therefore about

mobilizing these untapped resources of local people and turning it into real productive capacity. Local social capital also expresses the power of cooperation in the community and constitute a collective set of resources, built on inter – human relationship. Local social capital also embraces things like trust among participants, reciprocity, local identity and commitments and norms of behavior in the community. Moreover, according to empirical research (Birkhölzer, 2005, p. 9), social capital is able to compensate the lack of physical capital and financial capital. Furthermore, it can be invested as any other capital, not only for realizing social or community – oriented objectives, but also accumulating the necessary resources for further development. Therefore, building and improving social capital becomes one of the most important principles of LED.

6. Community central development. LED process has to start with at the first glance non – economic activities which are centered on community building and its development. It has been pointed out that any successful change has to start with the gathering of trustful change management group from different interest sectors (Lietaer & Hallsmith, 2011) in order to truly represent community interest. Second step is to form a clear and wide accepted vision (Constanza, 2001) before taking any action. And only then when these steps are completed, community may be exposed to new initiatives and changes.

These six principles constitute fundamentals behind the community currencies. Every CC system should be considered using this framework and its success will depend on how well this economic tool can fit into this framework. The following real world examples will be described later, so reader will be able to understand how the real CC systems undertake this task.

3.4 Money circulation in the economy and how the crisis is started

Complementary currencies are usually meant to foster local economic transactions and thus increase the economic well-being of local agents. This aim is achieved by designing community currencies in an appropriate way, so that it's aimed at specific local economy sectors, where it would increase monetary circulation. An economic expansion is usually associated with market

booms, high trade, and times of prosperity, however during the economic downturns, conventional economic system tend decrease money circulation in the market. For this reason, CC design is able to fight economic recessions and maintain money circulation at least on a local regional level. Therefore, in this part of the thesis, I will look at how conventional money circulates in the economy, how the crisis is started and how complementary currency can fix demand problems. To be more precise, the following theory is mainly based on the ideas of Silvio Gesell and his work “Natural economic order”, in addition, some of the Irving Fishers ideas have also contributed to the CC’s theoretical background.

3.4.1 Conventional money circulation

First of all, I will begin with describing the production side of the economy or, more precisely, to what natural effects producers of goods are exposed. Afterwards, I will examine how and why possessor of money, who might be a consumer, an investor or a bank, acts given its own abilities and in response to actions of the producers of goods. So let’s look as supply of products first.

All real products disregarding of its nature (both durable of non-durable) inevitably lose value as time passes. Food, clothing, drinks, kitchen appliances, video and audio commodities and so on are exposed to a negative effect of the time in one or another way. Food rot, clothes wear off and etc. So every product tends to lose value after some time. Probably consumers rarely see media products which were available 20 years ago, because of improved technology which is stimulated by competition. This is not bad and it foster technological progress and the average people’s well-being is thus increased. But for this reason, the only way producer of goods can protect himself from this loss of value is by offering its products on the market just after they are produced. Therefore, supply of the goods cannot be postponed. Even though, independently of the will of the possessors of goods, supply must daily appear on the market and supply is equal to the stock of products even if the market price of them is unsatisfactory.

So producers are usually unwilling to accumulate inventory and therefore, they rush to sell their goods at whatever it takes.

Whereas, possessor of the money disregarding whether it is a bank or a consumer is not exposed to such conditions. The possessor of the money can therefore, postpone his demand and keep money without losing any value. For this reason, demand is able to ask for, and obtain some special tribute from its privilege of being able to withdraw from the market. The present form of money acts as an intermediary for the exchange of goods only on the condition that it is profitable to make such an exchange. This tribute can take form of profit or interest and is the condition upon which products are exchanged. Profit, in this case, is a profit which possessor of money can demand from producers, because he/she can paralyze the exchange of products by withholding money. For example, banks were reluctant to issue credit in the time of the economic downturn in US in 2008, so, in result, the GDP per capita had decreased (see graph 3 in appendix). For this reason, without this profit, money will not be offered in exchange, and without money to effect exchanges no product will reach destination or be consumed. Therefore, because of the uncertainty of the market, offer of money for products exist only under the certain conditions:

- Sufficient security against loss
- A profit for money
- The profit can be levied during the sales of goods and requires of one important condition: during the trade period the market price of good must not fall. For example, in times of trade expansion, when the average price of goods is rising, the producer profit also rises. It is when the difference between the production price of goods and its market price is sufficient to cover producers profit and pay interest to the banks or an investor. On the other hand, when prices are falling, the collection of the interest becomes hard or even impossible. Therefore, investment and credit sores during the economic downturns.

Money actually “steps out” of the market, so circulation of the money becomes low, when supply of the money becomes insufficient and a fall of prices begins or is expected. For

example, in US in 2008 supply of money (M2) had dramatically decreased and this resulted in a large decrease in consumption (see graph 1 and 4 in appendix)

Prices fall in effect of the decreased supply of money. Prices and supply of money are inter-dependent, so, even expected price fall may trigger the decrease of the money supply and therefore, decrease of the consumption expenditure. When the market “explodes”, willingness to consume falls, but production side continues to produce goods and thus inventory starts to accumulate. Steady and large supply of goods further pushes demand down, thus resulting in overproduction and further fall of prices. When firms start to realize that they overproduce, they recognize need for less labor and thus unemployment increases.

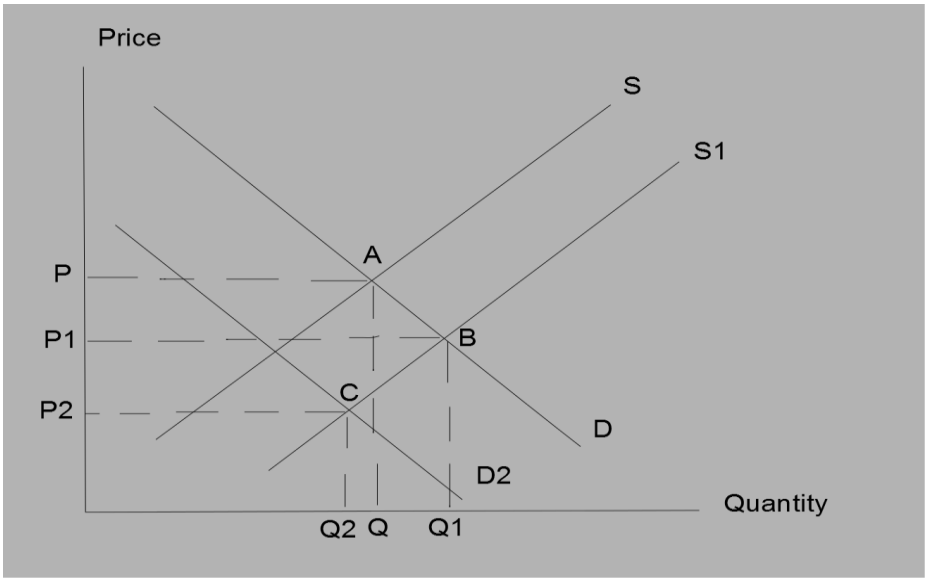


Figure 1.

So as a result of a continuous price drop, economic agents (which might be on both consumption and production side) fear to buy cheap as it could be brought even cheaper in the near future. Crisis breaks out, producers assets deteriorate and their liabilities increase. Anyone who has a contract to deliver money finds the engagement difficult to keep, because of the falling prices (which are equal to the profit for producers) of commodities, and then the suspension of payment begins. For this reason, credit and investment usually decrease and the demand for money increases by the whole mass of goods which are exchanged by the way of

credit at a time when money is scarce. Currently, figure 1 show how industry may behave during the “boom” and how the recession comes in. Point A shows industry state in the equilibrium, but when demand becomes insufficient and producers are still making their products, industry start to overproduce and economy shifts to the point B. In the point B quantity is higher, but prices decrease, and because prices had decreased, demand side becomes more reluctant to buy the goods as it expects even lower prices. Then the demand shifts downs and an equilibrium appears to be in point C where prices are even lower and the quantity is lower than in the equilibrium A.

3.4.2 Role of the Complementary Currencies

In the previous part, reader has seen how the production and demand sides are being exposed to the different effects and how these inequalities can cause economic crisis. Irving Fisher (1896) points out that if lenders (banks or investors) would have better foresight of the market price and interest rate adjustments, there would not occur any over-investment during rising prices and under-investment (stagnation) during falling prices (Fisher, 1896, p. 78). The lag of volume of trade behind the price change is found to be about 25 months and the lag of nominal interest rate behind the volume of trade is 14 months, found by (Snyder, 1925) and (Ayres, 1928), which in result constitute a combined lag of nominal interest rate behind the price change to be 39 months (Fisher, 1930, p. 251). We have seen that interest rate is a major factor for lenders as it constitutes their profit, sometimes interest rate is referred to as price of money (Fisher, 1930), for this reason I would like to introduce concept of “free-money” or money without interest rate. The concept of free-money was firstly introduced by Silvio Gesell in “Natural Economic Order” (1930) and then fostered by Irving Fisher.

The problem with the conventional money is that its possessor is able to hoard it without suffering any loss. Therefore, safe exchange of the commodities would occur only if everyone in the market would be indifferent as to whether he/she possesses money or goods, and this is

possible only if money is exposed to the same decline in value after some time as real goods are. Only if money has equal loss involving properties, it can rapidly, securely and cheaply exchange goods on the market. Such money would not be preferred to goods either by purchaser either by seller. Market participants would then only use money solely for an exchange of goods and wouldn't expect advantage from possession of it (Fisher, 1896, p. 30). Only if the conditions of supply and demand are equalized, then economic and monetary system would be free of imperfections and demand for products would appear regularly on the market and it would occur independently of economic and political conditions. Off course, banks role would be decreased because people would keep less money in the form of deposit thus decreasing bank reserves. Negative interest rate would then decrease the power of the banks speculation with the reserves which in some way is a positive feature for the society. If negative interest rate would be introduced in a form of a complementary currency, market would be ensured to always have certain demand for the products and thus economy would be more resilient and stable. In whatever way such money would be invested, it would immediately create demand. Directly through the purchasing or indirectly through the lending, the possessor of money will be obliged to create a demand for commodities exactly proportionate to the quantity of money in possession. It implies, that demand no longer depends on the profit (interest) for the possessor of money; that price formation through demand and supply is no longer affected by the desire to realize a profit of holding money; that demand is now independent of the business prospects and expectations of a rise or fall of prices. "Free-money" is not an instrument of the demand it is "demand" itself which is now exposed to the same effects as supply and is always ready to meet supply on the market.

3.4.3 CC system's effect on a closed economy during the economic downturn

Now, let's consider a scenario of an economic downturn. First of all, I would like to point out, that, in this case, community currency system is unlikely to affect international trade of the

state economy because of its relatively marginal size and because international corporations are unlikely to get involved because an additional unit off currency would make it difficult for accounting and internal financial operations.

In this case, economic downturn would be caused by the over-production or a market “bubble burst” and because of that prices started to decrease along with the demand whereas production is still quite steady. Banks and investors are very conscious where to invest and try to avoid any unnecessary risk of losing money, so credit and investment declines and remain low during this economic downturn. Now, suppose that several closely related local governments have decided to try new economic tool called complementary currencies and were able to successfully implement it at several cities and its boroughs. This currency was designed to have negative interest rate in order to stimulate demand for people who get this money. Also, citizens are provided with an additional opportunity to incorporate their own effort in order earn additional income in CC. Citizens are allowed to use complementary currencies together with the conventional money to cover part of their consumption cost. On the other hand, businesses which have earned this complementary money are able to convert it into conventional money at some lower exchange rate than 1: 1, because they get additional profit from the people, that they otherwise wouldn’t get without this complementary system. Government, in this case, gets additional taxes from the commercial transactions and can use this money to further maintain complementary currencies. Having considered this case, let’s see how IS-LM and AD-AS curves will shift in the traditional economics because of the community currency system.

IS: $Y = C(Y - T) + I(Y; r) + G$

LM: $\frac{M}{P} = Y * L(i)$

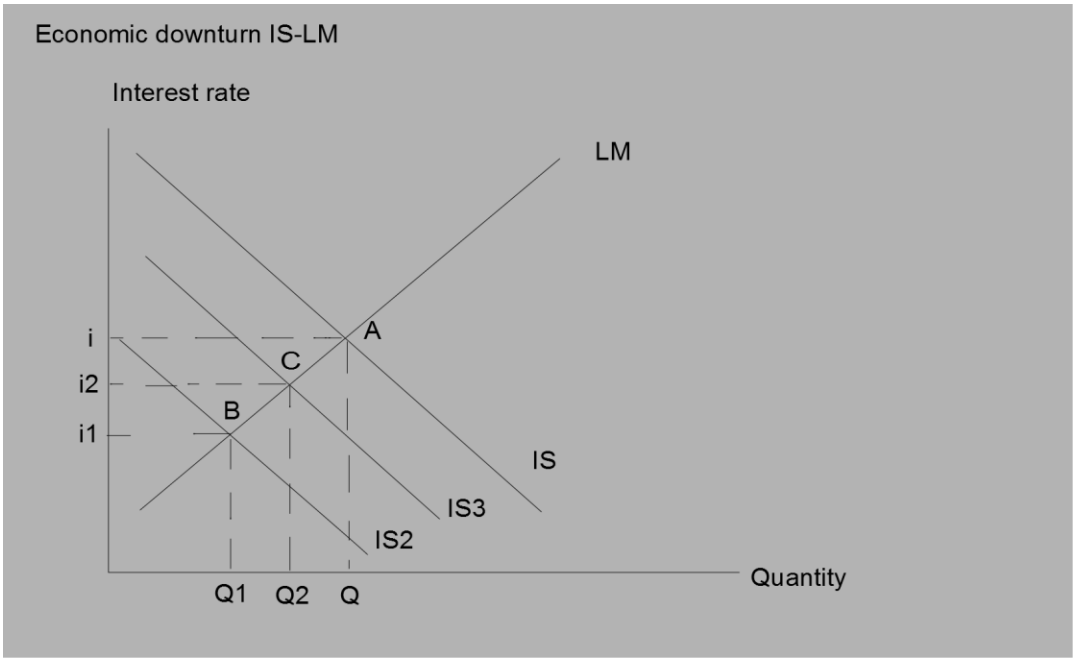


Figure 2.

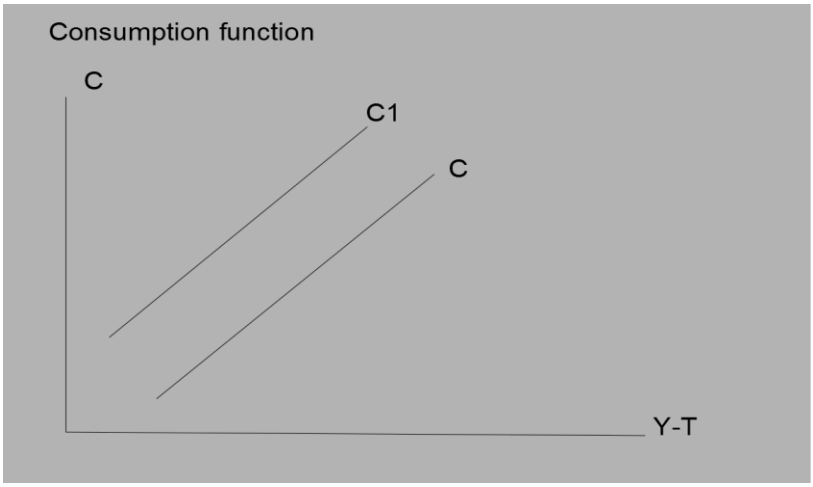


Figure 3. $C = C_0 + c(Y - T)$

Point A represents local economy being in an equilibrium state, with the output Q and interest rate i. However, as mentioned before, economy was shocked by the market "bubble burst" and interest rate have decreased and this downturn is represented by the point B. Output doesn't usually decrease in a short period, but assume that IS2 curve represent economy after some time when production quantity have already been adjusted. Because of the decreased interest rate producers might be forced to lay off some labor in order to cut cost and stay in the market;

for this reason production quantity has decreased. However because of government initiatives, people were provided with the opportunity to employ their labor power and earn additional income which would increase their wealth. Income has increased, thus increasing consumption and consequently increasing output of the local economy. This increase in output is represented by the point C where output Q_2 and interest rate i_2 are quite near the equilibrium state. The reason behind this shift to IS3 is that disposable income (Y-T) increases together with the consumer's propensity to consume – c, which shift consumption function up from C to C_1 (Figure 3). In addition, reader can expect that successful implementation of complementary currencies could result in further stimulation of the general economy and if this initiative becomes state wide accepted it is possible to expect that economy will return to the equilibrium state. In this case LM curve isn't affected at all, because complementary currency system is independent of the central bank and it is unlikely that central bank can have any direct influence on this economic tool. On the other hand, CC system is likely to indirectly affect banks operation, because it is directly affecting demand and output. But all in all, CC system isn't designed to hurt the main monetary system, but to complement it. Now let's look at the

AD – AS relation:

AD: $Y = Y(\frac{E * P^*}{P}; G; T)$

AS: $P = P^e(1+\mu)F(1-\frac{Y}{L}; z)$

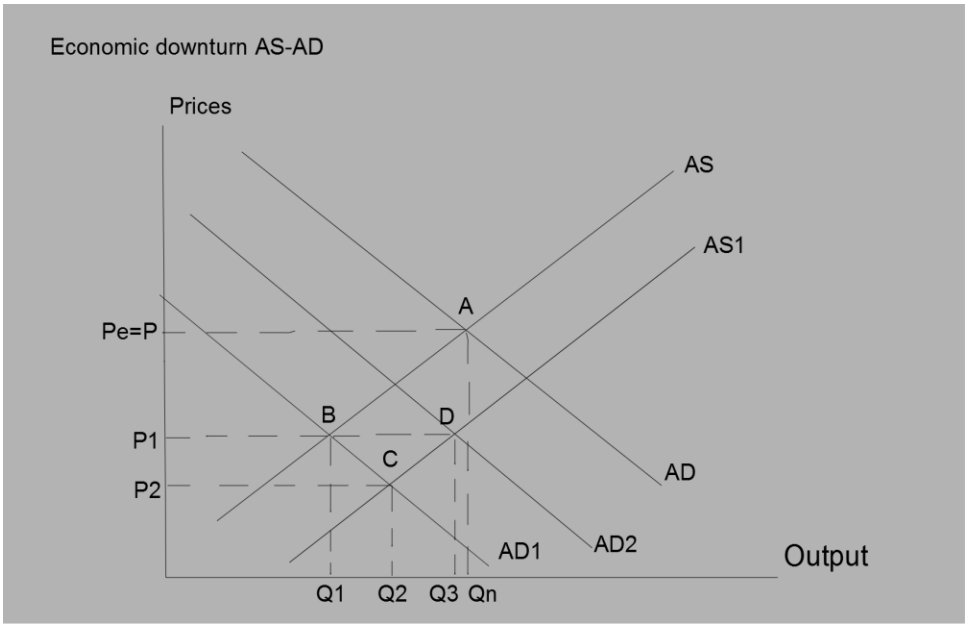


Figure 4.

Point A represents economy at an equilibrium state at which the expected prices are equal to the actual prices and output is defined by Q_n. Because economic downturn has caused fall of demand, AD curve shifts down to the AD1 where prices P1 are lower than expected, but output Q1 is higher. Because of the lower prices, producer's mark-up becomes lower (if all other costs being fixed), so AS will shift down to AS1 and the economy will be at point C. Here output is higher than at point B, but prices are even lower. So, in this situation, CC system will affect state of the local economy through the price increase. People will start to consume more because of additional money they get, which is designed specifically to increase demand during the economic recessions. This demand will shift prices up and thus AD1 shifts up to until it reaches point D which is more close to the equilibrium. In this point, output seems to be almost equal to the equilibrium output, but prices are still far below equilibrium level. In order to completely balance the economy, price expectations should be lowered or aggregate demand should be stimulated enough to produce high amounts of output in order to reach equilibrium price level. If complementary currencies work well, additional demand will have impact on the general demand level indirectly so that price level might be expexted become equal to the expected price level.

In conclusion, community currencies work as a stimulus for the aggregate demand. The reason behind this is that complementary currency has a negative interest rate or a “depreciation” rate which might for example be 7% - 12% per annum. Off course, design of this type of money can be very flexible and it is up to government to decide what is needed most. The point is, that the complementary currencies system works as an initial “push” for people to stop hoarding money and spend fixed portion of their income on the consumption. However, I wouldn’t suggest that this portion would be greater than the half of the citizen’s income, 25% or 35% in my opinion would be enough, because most individuals would like to save for more expensive items like cars, traveling, houses, technical equipment, so it would make saving even more hard than it is now. All in all, complementary currencies are able to fit into main economy and make a positive impact there, its level of circulation could also fluctuate depending on the state level of economy. For example, community currencies would be used more during the economic downturns, but conventional money would be a priority during the economic prosperity. To conclude, complementary currencies offer economic system a flexibility it needs and more diversity to absorb shocks. In the next part of the paper reader will see how CC systems are used in the real world and what effects it had caused.

4. CC systems in the Real World

4.1 Beginning of the WIR exchange system in Switzerland

In the year of 1934, during the Great Depression, a group of privately owned small-to-medium sized businesses in Zurich, Switzerland have organized a reciprocal exchange system which is called Wirtschaftsring (“business circle” in sw.) or WIR (“we” in germ.) (Valentini, p. 1) (Defila, 1994). More precisely, WIR’s founders were Wernier Zimmermann and Paul Enz who based WIR’s concept using the ideas of Silvio Gesell (Stodder, 2007, p. 5)whereas barter’s model was based on an already existing reciprocal exchange system in Scandinavia and Baltic states (author don’t mention the name of the barter) (Defila, 1994). In order to make reader better understand what have influenced the creation of one of the largest mutual exchange system in

the world (Studder, 1998, p. 27) I find it important to briefly describe economic and social conditions in the Switzerland and in the world back in those times.

In 1929th world economy went into the deep recession also known as the Great Depression (Wikipedia, Great Depression). This economic downturn lasted until early 40s in most of the countries and is the largest depression of the 20th century (2008 recession is sometimes regarded to be of similar extent). During the depression demand has collapsed and this led to large reductions of the market prices. On average, world market prices fell by 30% (Studder, 1998, p. 2). Many countries tried to protect its domestic production by imposing protective tariffs, import quotas, or even particular product restrictions. Switzerland also undertook such measures in order to protect its fragile domestic industry. Inside the country, unemployment was all over the regions and 95,000 unemployed persons were registered in 1934 (Studder, 1998, p. 5). Unfortunately, there was not any unemployment insurance so that unemployed citizens could be guaranteed as least minimum level of income. Also people found it difficult to repay their mortgages in times of the decreasing income, for this reason the number of abandoned houses has increased and real estate prices dropped (Studder, 1998, p. 6). Swiss government's major concern was to reduce its budget deficit. Therefore, investments were decreased, subsidies reduced and wages cut. In general, country was on a tight saving plan. It couldn't increase general tax, because people would lose even more income and demand would decrease even more (Studder, 1998, p. 7). So, one can see that Switzerland and whole the world was in a very complicated situation which is in some sense similar to the 2008 credit crisis.

Reader can now better understand that the creation of WIR was an economic initiative which was to protect local producers from the huge loses. How this protection was initiated and the description of the mechanism of the WIR's economic circle will be introduced in the following section.

4.1.2 WIR's mechanism and its details

WIR also could be understood as a mutual exchange system where one participant trades its goods on the internal barter network. Initially, 814 members were joined to the WIR in 1948, this number rose to 77,668 members in 2003 (Stodder, 2007). In order to understand this successful progression lets go deeper into the details.

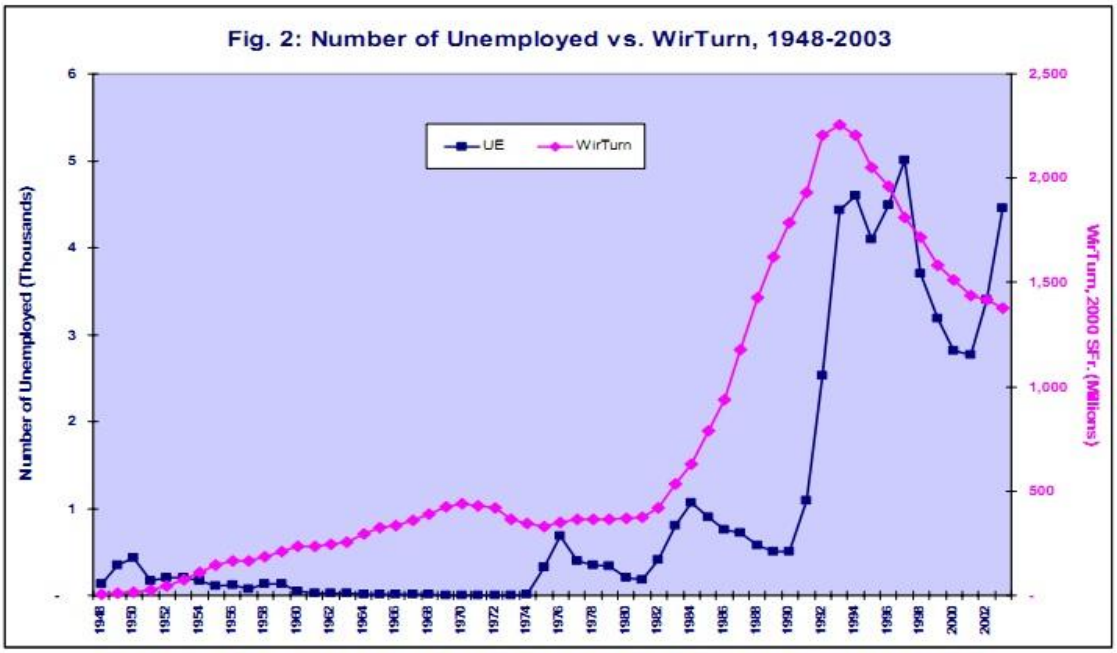
WIR was based on the free-money concept which was described in the section 3.4. For this reason, complementary currency called WIR franc was created and was kept solely on the member's accounts. The point is that if a company has over-capacity or redundant inventory and it wants to get rid of it, WIR will provide such opportunity by linking this company with other firm which needs those goods. Therefore, the selling company gets a certain number of credits on its account and is free to continue the trade in the reciprocal exchange network. James Stodder (2007) points out that, "Such a centralized barter exchange combines the functions of both a commercial bank and a central bank. It will thus have more detailed knowledge of credit conditions than either a commercial or a central bank alone". The main point there is that, WIR's central office is able to keep track of sales volume, price changes and participants actions and analyze this information in order to take reasonable actions and adjust whole system to the current need of its participants. Other unique attribute of the WIR is that it is able to issue both short-term and long-term loans in WIR's francs to the members of the barter. The WIR central office is able to grant loans without having received corresponding customer deposit first. Thereby it can freely create complementary currency balances and put them into the circulation (Studder, 1998, p. 20). This ability allows the barter network to operate by almost disregarding economic condition and foster its own economic cycles to benefit its members. The members are borrowing within the credit limits set individually by the central office (Stodder, 2007, p. 10), usually short-term loans are interest free whereas long-term loans bears on average 2% interest (Studder, 1998, p. 23). This interest is however lower than that of the commercial banks, the reason for this is that WIR's francs are not as universal as conventional money, so goods and services can be bought only within the network of the

participants. However, the loan business constitutes the major driving force of the exchange system, because the borrowers have to trade their products in the barter in order to repay their loans thus accelerating the turnover of the trade. On the other side, the non-credit customers enjoy sales occurred by the increased demand from the borrowers of the WIR francs and thus, consequently, non-credit members spend their income further in the barter system (Studder, 1998, p. 22). The demand for goods is promoted by the rule that every official participant must accept payment in WIR francs for at least of 30% of the first 2000 francs of the selling price and every loan holder must amortize his/her debt by selling goods or services for WIR (Studder, 1998, p. 22). To support effectiveness of the WIR's mechanism, initial credit amount was rising from the 0.3 million of Swiss francs in 1948 and reached its peak at 904.1 million of Swiss francs in the 1994 (Stodder, 2007, p. 15). On the other hand this success didn't come without fighting the obstacles in the years of the existence of the WIR, so next section will discuss the reasons of this success and the failures of the exchange system.

4.1.3 Reasons of the WIR's success, its economic implications and its failures

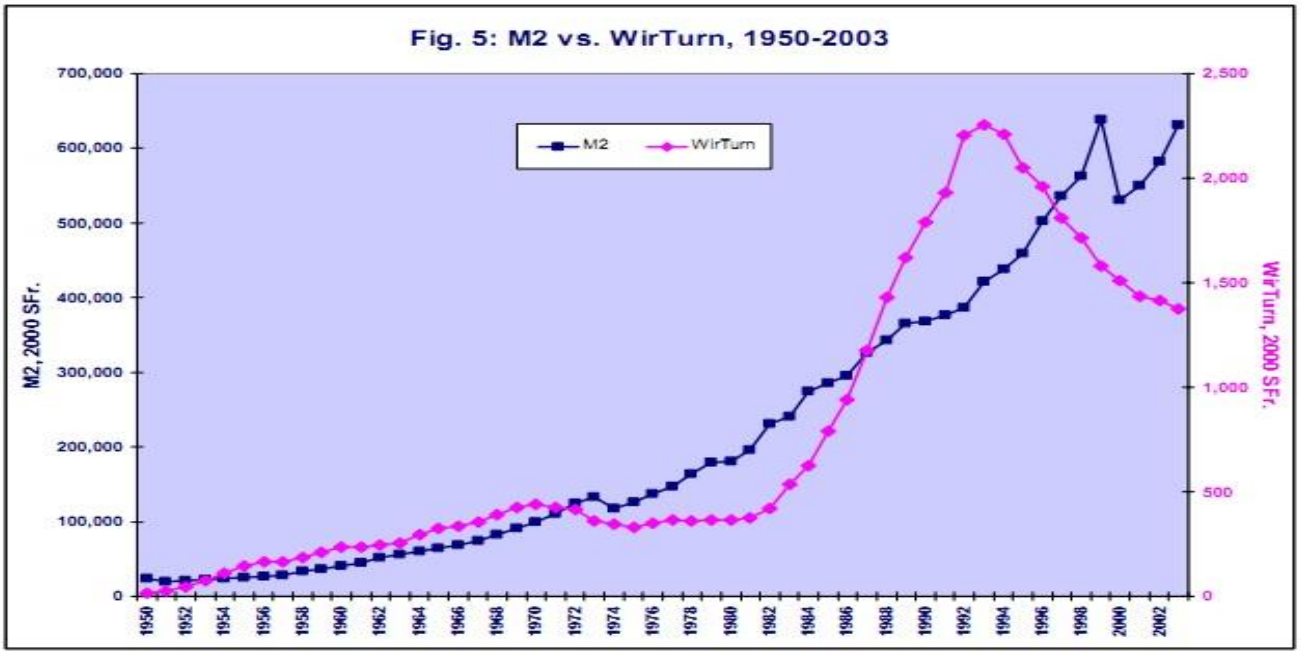
Wirtschaftsring's importance in the Switzerland has attracted some attention of the researchers and thus it resulted in a quite limited number of the research papers and reports (Defila, 1994) (Studder, 1998) (Stodder, 2005) (Stodder, 2007) (Stodder, 2009). First of all, I would like to overview the result from some of the articles and summarize WIR's implications on the main economy in Switzerland. Afterwards, I will mention some of the difficulties which WIR experienced over the years.

James Stodder (2007) has found a positive correlation between WIR's turnover and nation's unemployment rate. It is not surprising, because CC systems in general are meant to use underutilized resources and link them with the unmet needs of the economy and society. To prove this argument Stodder (2007) carried out empirical research which findings one could see in the following figure (Stodder, 2007, p. 16).



One can see that even when the unemployment started to decrease from the 1984 until the 1999 WIR's turnover was still rising, whereas the expected positive correlation took place from the 1990 until the 1996. Even though current figure does have some outliers in it, it is possible to infer that CC systems use increase together with the rising unemployment thus preventing it from further increase or even decreasing it. To prove WIR's positive effect on employment, Switzerland was able maintain 4% unemployment rate in 2006 whereas average EU unemployment rate was 8.2% (Wikipedia, Economy of Switzerland). Off course this low unemployment rate might be influenced by other factors, but one should be able to admit that effect of WIR should be included as well. Other finding of James Stodder (2007) states, that WIR has counter-cyclical trend in relation with the main economy (Stodder, 2007, p. 28). It means that when Swiss economy suffers from the recession and money supply usually decreases WIR francs step in and tries to smooth out this liquidity decrease by fostering alternative ways of trade. He also found that WIR is counter-cyclical with the Swiss GDP and even more with the level of unemployment (Studder, 1998, p. 28). This study shows that there is credible evidence which support arguments of CC system's positive effect on the main economy. Next paragraph will discuss externalities which WIR might cause.

It would be intuitive to think that such complementary system like WIR can influence inflation level in the economy. However, James Stodder (2007) hasn't found any inflationary effects on the general price level, but on the other hand he suggests considering theoretical points of this possibility. All in all, WIR is counter-cyclical and conventional money supply is pro-cyclical, so consequently WIR franc supply increases when Swiss franc supply decreases. The effect of increased WIR turnover on the prices would not be inflationary, but, more precisely, anti-deflationary (Stodder, 2007, p. 29). Tobias Studer (1998) points out that, because of the WIR's ability to issue loans and thus create money, WIR was criticized to have undesirable impact on the Swiss National Bank's monetary policy. However, WIR's money supply does not have any influence on the monetary policy in itself, but it is the amplitude of fluctuations of the money supply that might cause disruptions (Studder, 1998, p. 31). Fortunately, WIR's money supply is so small comparing to the conventional money supply that it has basically no effect on the monetary policy. The following figure (Stodder, 2007, p. 25) shows Swiss M2 money supply ("Economists use M2 when looking to quantify the amount of money in circulation and trying to explain different economic monetary conditions" (Investopedia)) together with the WIR's turnover, so that the reader could imagine the different extent between the two money supplies.



Unfortunately, WIR was exposed to the inflationary effects during the 50's and 60's because of large increase in turnover (Defila, 1994). As Ezio Valentini noticed, "…WIR operators tried to boost the volume by lowering the standards in their credit extension policy and by making interest free loans to its members". All this resulted in a decrease of value and spend - ability of the WIR francs. Therefore, members of WIR started to trade their excess of the WIR francs on the "black" market (Defila, 1994) (Valentini). In order to rehabilitate the system the top management had to take extreme actions. First of all, composition of the management was changed and WIR franc was devalued (Defila, 1994) (Valentini), secondly, more strict rules were established to forbid the outside trading of the WIR franc (Valentini). These changes had extended the life of the exchange system. Moreover, WIR experienced very large increase of membership during the period of 1973 – 1993. During this period, number of participants increased from 20,402 to 76,618 thousands, turnover in Swiss francs increased from 196 million to 2,521 billion and the total balance on the accounts in Swiss francs increased from 83 million to 1,028 billion (Defila, 1994).

In conclusion, WIR proved to be a one of the most successful CC systems in the world and the statistic data shows a lot of potential even in the forthcoming years. I hope that the reader have seen how the ideas and believes of some people might result in a relatively impressive improvements. However, WIR's success did not came ease, it was criticized heavily by the mass press, government officials, but despite that, it managed to withstand all the trials and the tribulations, because people who believed in themselves and the WIR were ready to make sacrifices (Defila, 1994).

4.2 Local Exchange Trading Schemes (LETS)

Now I shall describe and explain another quite prominent complementary currency system called LETS. LETS is especially widespread in the UK whereas in the US same principle system is called a Time Bank. The concept of LETS was first developed by a Canadian, Michael Linton in the early 1980s, after he has successfully developed such a system in Vancouver (Williams, p.

85). In the UK, LETS was noticed in the early 90s, the number of such systems increased from 5 in 1992 to 450 in 1998 with over 20,000 members (Williams, 1996) (Aldridge & Patterson, 2002, p. 371). One of the reasons of such growth is expected to be a widespread uncritical promotion of LETS potential (Aldridge & Patterson, 2002, p. 371). England's government also played its role quite well by providing direct funding, such as the employment of LETS development workers, promotional activities by central and local governments and by providing free use of different facilities and real estates (Williams, 1996 , p. 86) (Aldridge & Patterson, 2002, p. 372). LETS might not be that old as WIR, but the reader might pay interest to the large increase in a number of LETS systems in a relatively short time period. Having done this brief introduction I will further continue with explaining how the LETS work and describing system's general objectives.

4.2.1 How LETS works and its objectives

The function of LETS is to allow people to trade goods and services in a locality without using conventional money (Williams, 1996 , p. 85) (Aldridge & Patterson, 2002, p. 371). In general, it attempts to develop a parallel complementary form of social and economic organization within the local context (Pacione, 1997, p. 416) (Croall, 1997, p. 38). It does so by providing a framework where members of the system list goods and services they want to receive and what they are willing to do in return. Then members contact each other through the phone or virtually and agree upon conditions and the price. Part of the price might be paid with conventional money, but only local currency is recorded onto members account (Pacione, 1997, p. 417). Member's balance account is visible to all other participants and member is obliged morally to balance their accounts (Pacione, 1997, p. 416). LETS currencies are different between the systems and they have three distinctive features: first, their use is usually restricted only to the members within the system; secondly, no interest is charged neither on debits or credits (Pacione, 1997, p. 416) (Croall, 1997, p. 34) (Seyfang, 2001, p. 587), and thirdly, the currency is created only through the exchange of goods and services and not issue by the central authority (Aldridge & Patterson, 2002, p. 371). LETS' general objectives can be group

into three major categories: economic objectives, social equity objectives and community building objectives (Williams, 1996 , p. 87). So let's discuss each objective at the time.

Economic objectives. The main economic objective of LETS is to facilitate consumption of local goods and services and thus to help to rebuild local economies which would be more inter-linked with each other and less reliant on the import and external economic shocks (Pacione, 1997, p. 416) (Lang , 1994) (Dobson, 1993). Michael Pacione (1997) argues that the general effect of globalization was an economic disruption of the local economies, because, from the capitalistic point of view, small local economies are not profitable enough to justify sufficient capital inflows which would be very beneficial for the local economic and social development. LETS is regarded as mechanism which provides opportunity for a greater local control over finances and economic affairs since the local currency cannot be used beyond the boundaries of the area, and so it tend to facilitate exchange within the local economy regardless of national currency shortages (Williams, 1996 , p. 88) (Pacione, 1997, p. 418). The intention of a local currency and thus LETS is to provide an ability to resist external economic changes (Seyfang, 1996).

Social equity objectives. LETS is mostly seen as a mechanism for encouraging and providing opportunity for unemployed to participate in informal work and thus reduce social inequality (Williams C. , 1994). LETS allows unemployed to demonstrate their skills by participating in informal labor market and thus boosting their self-esteem and improving their skills (Williams C. , 1996 , p. 89) (Seyfang, 2001, p. 588). Gill Seyfang (2001) found in his study of the King's Lynn and West Norfolk LETS that the unemployed members were the most active participants and benefited the most from the system among others groups. LETS allows unemployed people to acquire or borrow the funds from either businesses or individuals, or the whole community, in order to get ready to undertake informal activity. Therefore, the value of LETS approach is that it theoretically can directly attack each and every one of the barriers which prevent the unemployed from taking part in informal work, both as consumers and as providers (Williams C. , 1996 , p. 89). To summarize, LETS attracts members who are not engaged in any full-time employment, but who also have economic and social needs to be met and have the time

available to offer their skills or, in other words, groups in the society who need access to informal employment opportunities the most (Schraven, 2001, p. 585).

Community building objectives. Colin C. Williams (1996) argues that there is no "natural community" in which social order and integration emerge automatically, without direction or eve intention. Instead, the emergence of community requires favorable social structures (for example, stable population) and also the active creation of community. Therefore, people need to actively participate towards improvement of social structures and networks in order to build strong community. Because communities are not natural entities and are constructed by the peoples effort, LETS provide relevant formally structured framework within which social networks can develop through the continuous flow of goods, services and information (Williams C. , 1996 , p. 90) . For example, Williams' (1996) study on Totness LETS revealed, that 69% of members admitted that trading through LETS have helped them to develop a wider network of people they can call on for help. Jonathan Croall (1997; p41) describes story of a pensioner who found her house flooded because of a burst pipe and when she turned to LETS for help she recalled: "Within 20 minutes there was a team of five men at my house. The water was switched off, they took out the carpets and the bedding, and they sorted out the furniture, offered me accommodation, and went on mopping everything up until four in the morning. And over the next three days they helped me sort everything out. I had no worries; they took all the stress away. It was like a miracle". Mainstream economics might not take such an issue into account, but economics is also concerned with the individual well – being and LETS represent an alternative and a complementary way to increase well – being both for individual and for the community. Gill Seyfang (2001;p587) indicates, that significance of LETS offered services is much higher in terms of improving quality of life of participants than the economic activity suggests. Now, when LETS' objectives are presented to the reader, I would like to review some study results and statistics which would show real implications and characteristics of this complementary system.

4.2.2 Results from the studies on LETS

LETS potential has attracted a number of researchers from the academic society especially in England. Therefore, I find it relevant to briefly review some of the study results which were found after caring out a number of interviews with the members of the local LETS systems.

First of all, motivation for joining LETS was found to be purely economic (Williams C. , 1996 , p. 93) (Seyfang, 2001, p. 585) from the studies carried out on the Totness LETS and on the King's Lynn and West Norfolk LETS. However, results across studies differs, for example Totness LETS was not able to create significant economic opportunities (Williams C. , 1996 , p. 92), which means that the trade level was very low and only minority of members could have benefited from the trade activity, however member of the King's Lynn LETS who had joined specifically because of economic reasons reported, that 46% of their income earning trades would have been foregone, showing that these participants were able to meet their economic objectives (Schraven, 2001, p. 586). Moreover, 77.3% of the Skye LETS members reported that they were able to reap real benefits from the membership (Pacione, 1997, p. 422). On the other hand, LETS turnover still remains marginal, around 1.4 million pounds in 2001 (Aldridge & Patterson, 2002, p. 373), which is on average 70 pounds per capita on the national level (Seyfang, 2001, p. 583). Despite the economic factors, LETS is quite successful from the social perspective. 69% of members of Totness LETS were able to widen their social network (Williams C. , 1996 , p. 95), 74% members of the King's Lynn LETS were able to do the same (Seyfang, 2001, p. 587) and this was also the case in the Dorchester LETS (Croall, 1997, p. 36). One interesting attribute of the LETS in general is that local trade fairs were found to be very useful in enhancing the trade level in general as well as developing social networks and eliminating the mistrust between the participants (Aldridge & Patterson, 2002, p. 374) (Schraven, 2001, p. 587) (Pacione, 1997, p. 417). Majority transactions are for the consumer services, like, gardening, baby-sitting and elder care, property maintenance, health services, various training activities, and also for locally produced goods, food and clothing (Williams C. , 1996 , p. 94) (Seyfang, 2001, p. 582). Off course, the range of the goods and services might be even wider, as one can imagine the

number of people with different skills, educations and occupations scattered around the country. LETS offers great potential in education and skill development, as it requires only minimum amount of capital (depends on the activity), consequently study on Salisbury LETS revealed 35 different educational possibilities to its 105 members, concentrating mostly on languages and the arts, whereas Lancaster LETS, with 238 members, offers even more wider range of activities, like, guitar lessons, computers and proof-reading, dissertation writing, motorcycle maintenance and etc. ((Croall, 1997, p. 38). The theoretical potential of the LETS is indeed great, but it still far away from exploiting all the benefits completely. For this reason, next paragraph will be about the limitations of the LETS and the essential improvements required, which would allow to gain most benefits of LETS by its users.

4.2.3 LETS' limitations

LETS is relatively "young" complementary system if compared to the WIR. It is also very diversified, and small separate systems are spread all over the England, where on average each system has around 100 members, in the best case from 250 to 500 members. Therefore, separate system does not have so much effect comparing with the WIR. Theresa J. Aldridge and James Patterson (2002), in their study on Hounslow LETS, group limitations into the four major categories which are: fiscal issues, mismatch of supply and demand, organizational barriers and community and scale effects (Croall, 1997) (Pacione, 1997). These limitations fit quite well to the LETS in general, but I will also complement it with the findings from other studies in order to grasp the full picture. So, let's see what these limitations mean to the LETS system in general.

Fiscal issues. Most LETS members appeared to misunderstood the concept of the borrowing in the LETS system. Some people didn't find it easy to understand that "debt" in the complementary economy is to the community rather that to the individual (Croall, 1997, p. 51). Usually people tended to relate LETS' borrowing with the traditional borrowing mechanism and this reduced their willingness to initiate trade. It should be clearly stated, that precisely, ordering of goods and services from the LETS will result in a greater trade and a circulation of

the credits. But some find it scary especially because one's services might be redundant especially the number of members is low and range of goods and services is narrow.

Problems with the supply and the demand. Primarily, members identified a need for the practical services, including: plumbing, decorating, laboring, gardening, and transport. But some members of the Hounslow LETS indicated a great deal of frustration with the inefficiencies of LETS trading, either because the goods or services they required were simply not offered or because they had to spend a lot of time trying to contact supplier or the additional cost (phone calls and transportation) made it unattractive to purchase the services (Aldridge & Patterson, 2002, p. 377). In general, this indicates, that supply and demand cannot reach its goals mainly because there is just too little goods and services on the informal market (Williams C. , 1996 , pp. 96-97) (Seyfang, 2001, p. 590) (Pacione, 1997, p. 424).

Organizational barriers. Study on Hounslow recognized internal barriers within the system. This study showed that new member should be provided with sufficient support and advice in relation to the practical side of trading. People should be clearly explained the basic principles of the LETS' mechanism and be encouraged to be active when they join the system. For example, Richmond LETS offers a reward to the biggest spender of each quarter of the year, whereas Falmouth LETS runs regular trading competitions (Croall, 1997, p. 52), in order to give members incentive to trade.

Community barriers. Some member may find it unreliable to trade with the strangers through LETS (Aldridge & Patterson, 2002, p. 378). Interviews revealed that some people didn't want to trade with the strangers because there were no guarantees about the qualifications and education of the service providers and the quality of the services itself. Moreover, it was found that people are more willing to trade within the small area, because it would save time and lower transportation expenses (Croall, 1997, p. 53) (Aldridge & Patterson, 2002, p. 379). All in all, it would be much beneficial if preferences of the members would be considered first, before establishing new complementary system. It could be done in a form of questionnaires, surveys and interviews or even collaborations with local non-profit organizations.

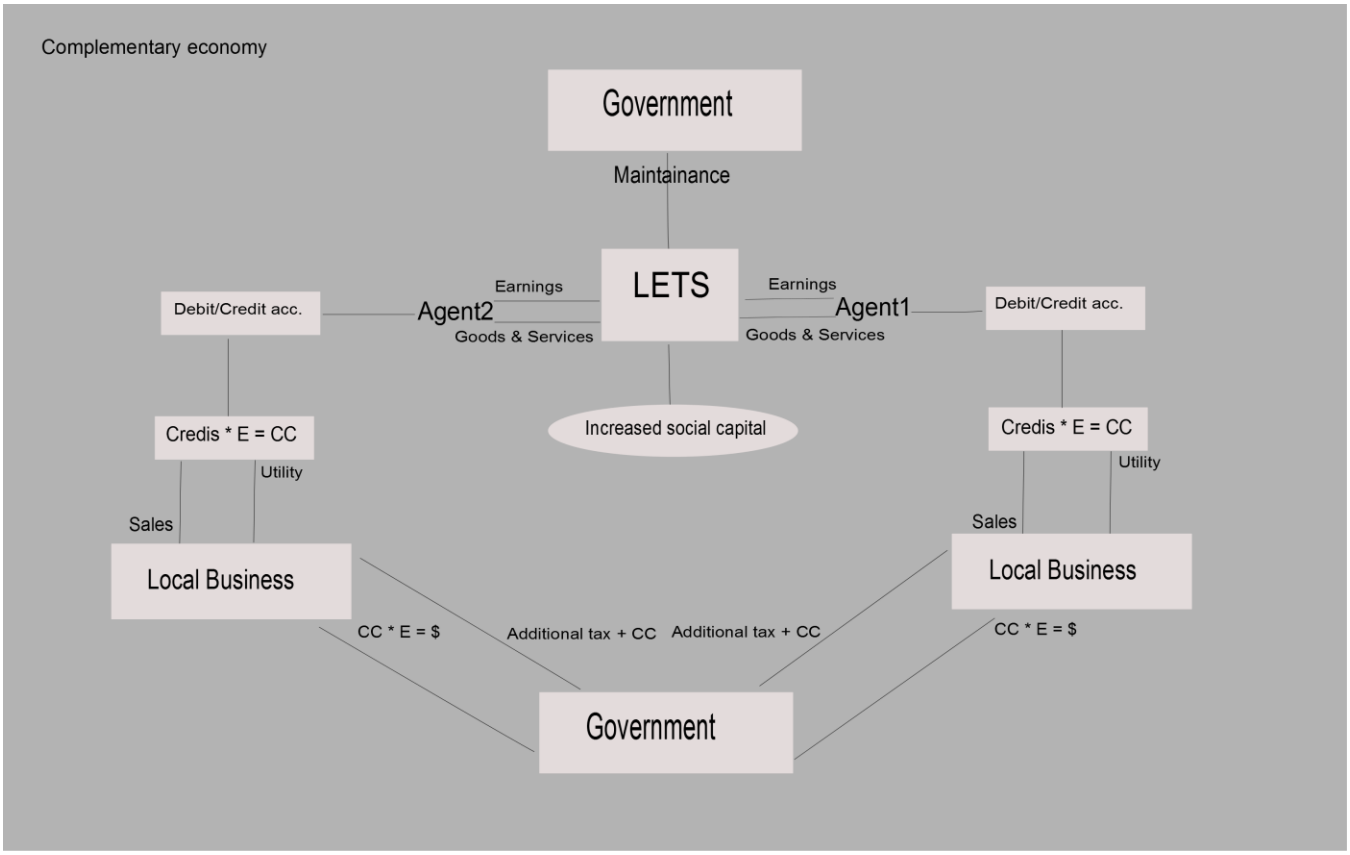
Policy issues. Some studies on the LETS emphasized the importance of the local and central policy towards LETS (Williams C. , 1996 , p. 97) (Seyfang, 2001, p. 590). Reason for this is that, England's benefit agency considers LETS income as official earnings and for this reason unemployed people might suffer from the benefit cuts, thus discouraging them from using LETS (Williams C. , 1996 , p. 98). Therefore, it was proposed by Williams (1996) to follow example of the New Zealand's policy structure, which basically states that "Social Security Act of 1995 exempts LETS earnings from the income only if unemployed LETS members continue to search for employment; that any Australian dollar earnings on LETS, when the job is completed to a mixture of LETS units and national currency, must still be declared and will be counted as income for social security purposes; and that the LETS' official status must be a non-profit local community-based organization (Williams C. , 1996 , p. 99). In this case, government plays essential role, so in order for LETS to comply with the legal issues it should be ensured that policy is adjusted perfectly and that it doesn't prevent LETS from exploiting its full potential.

In conclusion, LETS is a great tool which can increase wealth of the local economies and make them more resilient to the external shocks (Pacione, 1997, p. 416). It also fights the unemployment and increase person's feeling of self-esteem and feeling of a community belonging. At this point of time, current LETS systems in the UK are not fully exploited and still lack major improvement both internally and externally. However, Jonathan Croall (1997) indicates great potential in inter-system trade where LETS, which are close to the each one, could form a common network in order to boost number of the members, increase range of the goods and thus solve basic issues which are stated above. For this reason, LETS needs to improve its operations internally in order to handle complicated administration issues of the conglomerate complementary system (Croall, 1997, p. 55).

5.1 A theoretical model of the CC system

In the last, practical part of this thesis I would like to propose a theoretical complementary currency system model. By doing this, I expect to increase readers understanding about the CC

mechanism itself and to form awareness about what it takes to implement such a system into the general economy. First off all, I will start with describing the complementary economy's circle to form a general view. After that, I will try to look at this system from the government, individual and business perspective and to understand what each party gain and what it will need in order to realize its goals in the complementary economy. Finally, I will propose some cost recovery mechanisms in order to provide the system with the ability to generate income. In conclusion, I will try to argue why Denmark would be a quite convenient country to implement such a system and I will also summarize most important points of implementation of the CC system.



First of all, I want to emphasize that this model was made by assuming that government will play a major role and will provide sufficient financial and political support. I also assume, people's and businesses willingness to participate in the complementary economy. This

economy may operate either during the economic recession or either during economic expansion. However, complementary economy is mostly beneficial during the high unemployment period and economic recessions as was already noticed before. In this case government is willing and is able to initiate a mutual exchange system, which would be quite similar to the LETS system described earlier. Let's assume that project would be on a city or a regional level, so the current exchange system would operate in quite large area comparing with the LETS in the UK, which implies greater number of participants and wider range of goods and services. Current LETS system's mechanism would be used to trade these goods and services among the participants and thus earn additional income. Members would have their own virtual accounts, where the credits would be stored. Let's say those credits would directly refer to the national currency like WIR franc does. The reason is that in this way, complementary currency would have similarity with the national currency and it would be also easier for the businesses because they would not need to change pricing system (Lietaer & Hallsmith, 2011, p. 228). Goods would be directly priced with this complementary currency whereas services would be priced using the hours which could be converted into the CC. For example, if someone does some work for the other party, hours of work would be registered and then translated into the complementary currency as it is done in the main economy. The hour rate would be the same disregarding the nature of the work, I also propose to make it little higher than the national minimum wage per hour. The reason for this it that more qualified people might not work for only minimum wage and thus minimum hour rate might work as disincentive for them to take participation in the LETS.

As time passes, member of the LETS would accumulate certain amount of the complementary currency which could be used to trade within the LETS or could be used outside the virtual system. There would be two ways to materialize virtual complementary currency. One way is for government to print out the notes and the second way is to use electronic credit card system. At this point, it is hard to say what would be more beneficial and it probably depends on the government's budget and the other conditions and preferences, but I would prefer to see use of the electronic cards. Credit cards might be more expensive at the beginning of the operations, but, with the time, cost should be offset as membership would increase. So,

members could transform virtual credits and used them at the local businesses, where goods and services could be purchased. However, only some proportion of the price could be paid with the CC in order not to discourage the participation of the businesses, whereas trading within the LETS could be done using only CC or as is negotiated between the parties.

Finally, some portion of the complementary currency will be acquired by the businesses, which they could use to trade among each other or to convert it into the national currency at the central office. However, during this conversion, complementary currency should be exposed to the negative interest rate in order to further stimulate its circulation. This negative interest rate could take form of a fixed payment per certain amount of CC or, for example, 5% discount rate could be charged on whatever amount of CC. So, businesses could choose whether to use CC and trade further or whether to incur certain "cost" and transform it into conventional currency. This would offer sufficient flexibility which is good, because it can be used under different circumstances. For example, if participating business's suppliers are not the member of the complementary economy, it would be more beneficial to transform CC into the national money and repay them with it, but if the participating business sees further opportunities to make use of their CC, they will trade further, because thus they won't incur negative interest rate cost. Now having discussed the mechanism of this CC system, let's look at it from the different perspectives of the participating parties.

Government. Government's role is very important here, because it maintains virtual LETS system, employs workers and specialists, and operates central office which deals with the conversion of the CC for the participating businesses. In order to easy this burden, government could employ various non-profit organizations, or use its own underutilized resources within its own the bureaucratic system. Government could provide free facilities, some capital and its own specialists. It also must ensure right policy towards the complementary economy and adjust it with the other laws. If the system would evolve and its credibility would increase, government would benefit from the decreased unemployment, increased social capital and stronger community bonds. Resilience and diversity would be fostered in the region, and the local economy would become more independent to the external factors and shocks. Moreover,

government would benefit from the increase in the taxes collected, which would take form of the national currency and occur when individuals make the additional purchases from the local businesses.

Individuals. Most important drive of the complementary system is individuals, because they create complementary currency by trading on LETS. The main advantage of the mutual credit system is that supply of money is self-regulated and there is always sufficient amount of the currency as long as one individual has to offer something and the other needs something which is offered (Lietaer & Hallsmith, 2011, p. 231). There is also no risk of inflation in such a system (Lietaer & Hallsmith, 2011, p. 234). Basically, individuals benefit from the informal employment and the additional earnings which could be used to purchase the goods and services needed. The most important role of the individual is to overcome mistrust of the complementary system, therefore the government is a good initiator because it basically should serve the public need and not a private interest, thus establishing credible feeling of the coordinator of the system. If some individuals might try to go into debt and then quit the system, government could ensure that such citizens will be punished using conventional laws toward the fraud. If individual would trust the complementary economy, there should not be any obstacles why unemployed or part-time employed citizens wouldn't benefit from the participating in the LETS.

Business. Local firms should make much more effort in order to fully exploit the benefits of the complementary system. First of all, they should find convenient way to deal with the multiple currencies which means that pricing must be very flexible and there should be changes in the company accounting system as well. But example, of the WIR showed that this is possible to do, just it requires continuous effort and in the end, economic crises might not be so harmful and certain demand level could be ensured during the economic downturns. All in all, additional demand is the main objective for the business to participate in the CC system, so first of all LETS must reach sufficient number of the participants, in order to provide enough incentive for the local businesses to step in.

The last point which is very important is cost recovery mechanism. Cost recovery is very important because if income is not generated to pay off some of the labor and effort of

maintaining the system, the complementary economy will not be sustainable in the long – run (Lietaer & Hallsmith, 2011, p. 234). One way to get some income is to take membership fee in national currency. It is not possible to estimate the frequency of the payment, but is seems reasonable to make two to four payments per year, off course if it is needed members could pay per month. This mechanism could be complemented with the negative interest fee, which would occur if businesses would like to exchange complementary currency into the national currency. This fee could amount to 1% - 2% per month and it could be adjusted frequently depending on the number of the participants. In addition, Bernard Lietaer (2001) argues, that these two cost recovery mechanisms are the best, because they provide incentive to stimulate the trade, which means, the more a person trade the less it has to give up.

On my opinion, Denmark is a suitable place to implement such a complementary system. The current CC model obviously requires a great support from the government side. In Denmark, during the period 1990-2000 public sector on average constituted 44.11% of the GDP (IMF Finance Statistics, 1990-2000), social security and welfare alone on average constituted 16.13% of GDP (IMF Finance Statistics, 1990-2000), being the most expensive public sector's area. These numbers proof, that Denmark's government is ready to make courageous initiatives and is able to provide financial support. Off course, it could be expected that there will be an argument about the policy adjustments and it will not be an easy task to do. Other convenient attribute of this country is that only four cities have above 100, 000 citizens, leaving other 41 cities with relatively small number of residents distributed in quite small area. This implies favorable infrastructure for trading within and between cities or regions, which was not the case in England. All in all, CC system could offer real benefits for the Denmark's communities and main economy, if a proper incentive would be undertaken. To summarize, most CC systems in the world have not seen much support from the government and mainstream economics, despite that the number of CC system evolved with the time. I expect that this new economic tool will eventually attract sufficient attention from the right people. At this point, community currency system mostly need attention from the state citizens and the local businesses or the non-profit organizations in order to form certain awareness level and proof that economic recessions can be overcome even without using huge amounts of the national currency.

6. Conclusion

During the years, traditional methods used to stimulate state economy during the economic crises proved to be painful both for the state itself and for its taxpayers. Trillions of dollars were used to bail-out banks, insurance companies and other institutions, which are involved in financial operations. Globalizations caused capital flows only in those areas where the greatest profit may be generated (Pacione, 1997, p. 415) thus concentrating wealth in the one market or a place and consequently boosting the economy only there. Finally, market bubble tends to burst because of the overproduction after which prices fall and this consequently results in the economic recession. Economic crisis is both painful in monetary and social terms, because with the decreasing profits tend to decrease employment and thus cause social unrest. For example, in February of 2012, in Spain unemployment reached 23.6% which is one of the highest in the Europe and is very dangerous to a large country like Spain. Therefore, complementary currency system might be seen as an alternative solution to the high unemployment levels and a weakened economy. Concept of the complementary currencies was especially emphasized by the German merchant Silvio Gesell who wrote theoretical background for it. The main attribute of the CC is the negative interest rate which is seen as a stimulus to consume, so it is argued that if some of the income would be exposed to this negative interest rate, people would spend relatively fixed amount of their income even during the economic downturns. To prove that complementary economy isn't just a theoretical concept I provided reader with two thorough descriptions of the WIR system in Switzerland and LETS system in the UK. These descriptions should have revealed the major advantages and problems of the complementary currency system in general. Mostly CC lacks recognition from the government side and the business side, but likely this tendency should disappear as more and more complementary systems are established and the present ones are still growing and make their way in people outlook. For this reason, complementary economic system needs to be believed that it is able to work and provide real benefits to its participants. Even though this concept remains alternative to the mainstream economic society, it should be noticed that a number of the studies on CC is

increasing, thus making this concept worth attention and from the mainstream economics. All in all, at this point CC remains quite a theoretical concept with a large theoretical potential, but as the awareness increases it should be expected that somewhere in the near future the complementary economy will find its place near the main economy.

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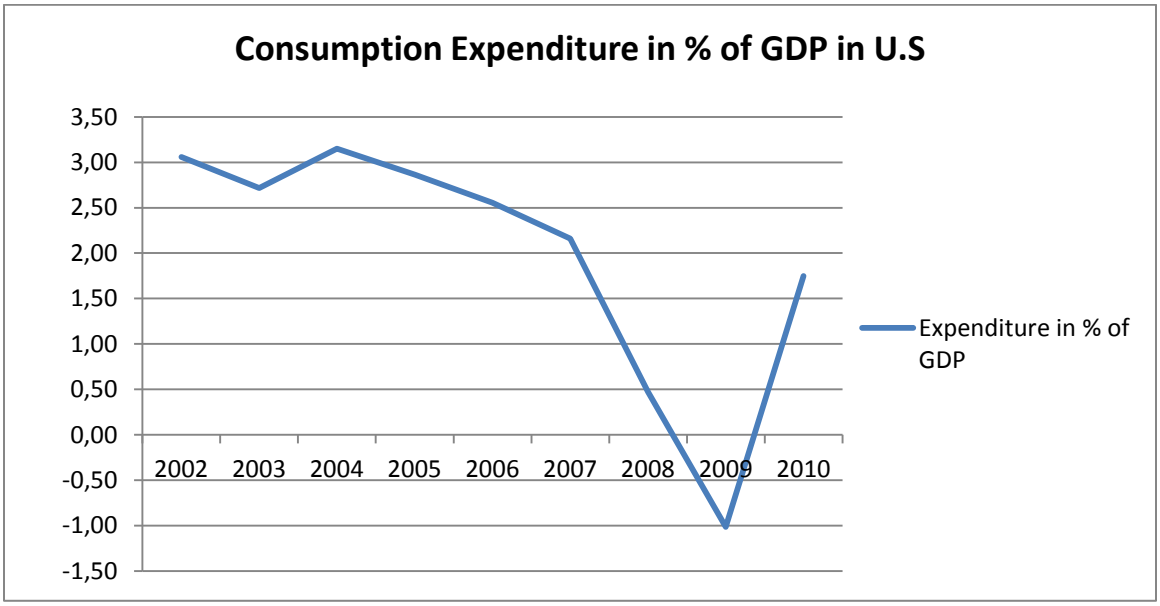
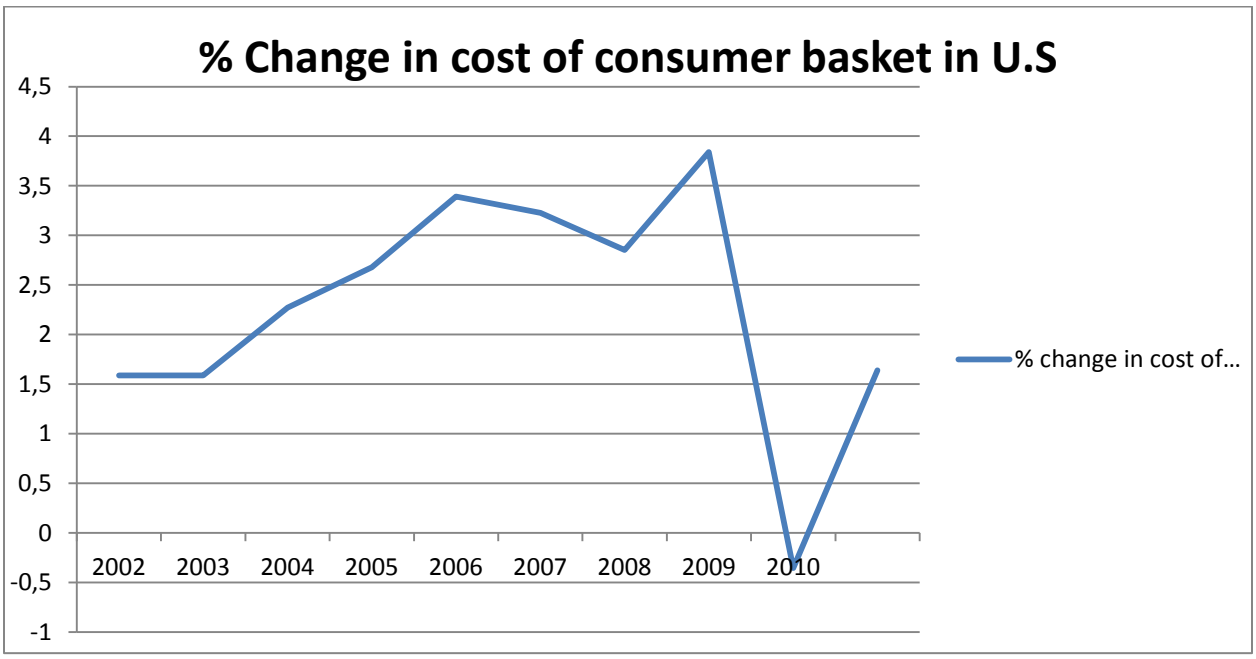
Appendix

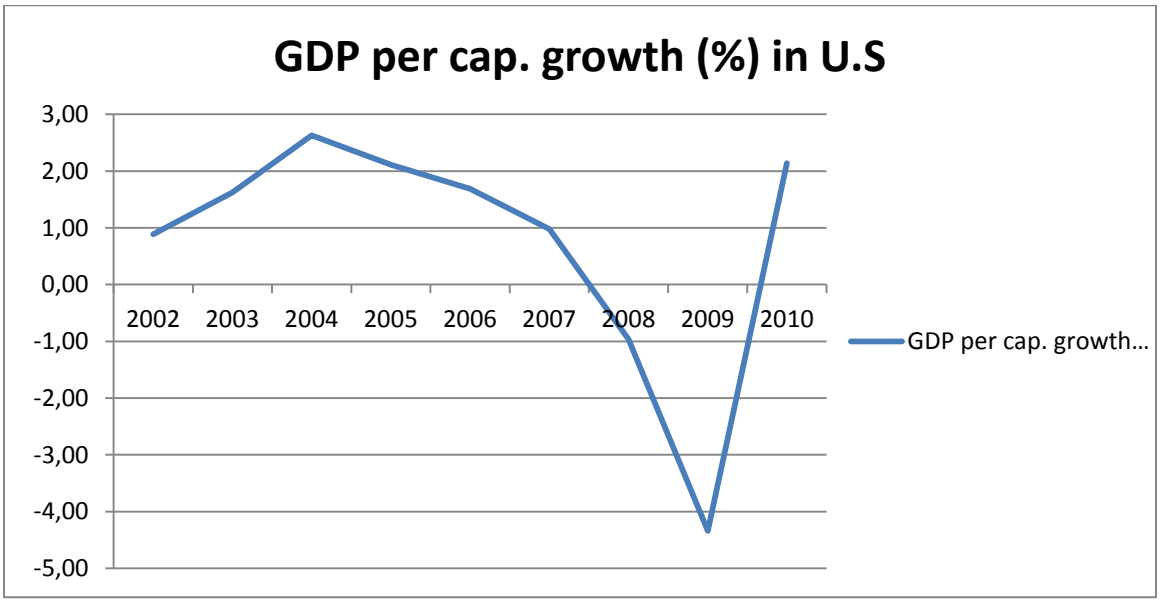
Graph 1. (WorldBank.org, 2002-2010)



Graph 2. (WorldBank.org, 2002-2010)



Graph 3. (WorldBank.org, 2002-2010)



Graph 4. (WorldBank.org, 2002-2010)