Table of Content

Introduction

Liquidity traps demand unconventional monetary policies when the nominal interest rate reaches, or is close to, the zero lower bound. The literature on escaping liquidity is very controversial, but many researchers have presented different methods of coping with the issue. Solutions such as announcing a higher inflation target, influencing the long nominal interest rates, fiscal policy, and currency depreciation. However, there are certain weaknesses with these policy measures, such as difficulty to commit or large fiscal deficits. Svensson proposes to combine different policies to escape the liquidity trap. He calls his proposal for 'The Foolproof Way', which consists of three steps that are discussed below. Furthermore, this report tries to give a short and non-technical introduction to the concept of liquidity traps, as well as comparing the theoretical framework to the cases of Switzerland and The Czech Republic.

There are certain differences between the theoretical framework of Svensson and the pegging of the franc and the koruna. These differences might have had an effect on the outcome of the policies. Therefore, we define our research question as following:

"Theory in Practice – Why didn't the 'Foolproof Way' work in Switzerland? A comparison of Switzerland and the Czech Republic"

Definitions

In order to understand our work below, it is essential to define certain concepts.
Liquidity trap: In order to understand 'The Foolproof Way', it is necessary to be familiar with the concept of liquidity trap. The economist Keynes first coined it in the 1930s. The failure of the central bank to reduce the long-term real interest rates, which stimulate investment and consumption, is defined as a liquidity trap. When the nominal interest rate reached the zero lower bound (ZLB), the central bank utilizes other instruments to try to stimulate the economy. The central bank does so by purchasing financial assets of longer maturity from commercial banks. However, such policy is not necessarily effective. Thus, leading to the inefficiency of the monetary policy in stimulating the economy and creating a liquidity trap.

Exchange rate: We shall utilize the definition of exchange rate similar to the one applied by Svensson (2003). The exchange rate is measured as units of domestic currency per unit foreign currency. Thus, an increase in the exchange rate implies a depreciation of the domestic currency.

Theoretical Framework

The majority of central banks aim of both stabilizing inflation around a low level and keeping output close to its potential level. Furthermore, central banks are forward looking, using information available to construct forecasts. Any time Central Banks predict a shock will affect the economy; they will try to minimize it implementing an adequate policy to each situation. A problem arises, though, when nominal interest rates are initially low and also inflation and future inflation. In this case, conventional monetary policy seems unable to provide sufficient stimulus to the economy, since the economy is satiated with liquidity. When liquidity traps and deflation occurs the real interest rate becomes too high and the economy enters into a prolonged recession and a deflationary spiral.

The optimal way to escape the liquidity trap and why it doesn't work

We consider here rational expectations. The Central Bank can intentionally promise to overshoot the inflation target and make an expansionary policy. This would lower real interest rate and increase output. However, once out of deflation, the Central Bank has no incentives to keep its promise. The private sector predicts this and nothing will happen in the first place. The Central Bank needs to commit itself and that can be hard using only nominal interest rates.

Solutions to escape a liquidity trap - Literature review

There are several solutions that were proposed as a way to escape the liquidity trap. However, all present some problems that impede its success in practice. Here, we are going through some of the solutions suggested by the main literature. First we start by Krugman's (1998) suggestion that the Central Bank should "credibly promise to be irresponsible". As such, the Central Bank should announce a higher inflation target as a commitment to a higher future inflation rate. The problem lies on the credibility of this announcement. If not accompanied by any action, such as the publication of inflation forecasts, the private sector

expectations are not likely to be affected by this intention. Another solution contemplated by several authors (Benhabib, Schmitt-Grohé and Uribe, 2002; Bernanke, 2000; Clouse et al., 2003; Goodfriend, 2000; Meltzer, 2001; Orphanides and Wieland, 2000) consists of expanding the monetary base. An expansion of monetary base will increase inflation expectations and allow for a reduction in real interest rate if it is seen as a permanent expansion. Once again, we have the problem of the Central Bank's commitment: while the liquidity trap lasts and the interest rate is zero the demand for monetary base is perfectly elastic and absorbed by the private sector. However, when the liquidity trap is over and the nominal interest rate positive, the demand for monetary base will sharply be diminished which requires a reduction of money supply by the Central Bank. The private sector foresees the lack of incentives for the Central Bank to keep its promise and will not adequately respond to its efforts.

Long real interest rates are crucial for consumption and investment decisions. Hence, considering everything else equal, a reduction in long nominal interest rates could lead to a reduction in long real interest rates and that way contribute to escape the liquidity trap. Several authors propose how the Central Banks can achieve this with effectiveness. Bernanke (2002) suggests that the Central Bank should commit itself to buy an unlimited volume of government bonds at a particular interest rate, while Orphanides and Wieland (2000) propose a commitment to keep the short nominal rates at zero, once they rely on the hypothesis that long bond rates are related to expectations of future short nominal rates. However, these measures may not be enough to provide the necessary stimulus to the economy, it is also necessary to create long term inflation expectations.

As an alternative to traditional monetary policy, fiscal policy can be a solution to escape the liquidity trap. Eggertsson (2003) notes that increased budget deficits will be financed by the central bank, depending on the degree of independence of the central bank, which will lead to inflation expectations. Saxonhouse (1999) and Feldstein (2002) on the other hand defend the use of fiscal policy to lower the real interest rate net of taxes and subsidies. Again, these policies present the problem of credibility.

Finally, we consider currency depreciation. This last policy has been widely debated in the literature (for example, Bernanke, 2000; McCallum, 2000; Meltzer, 2001; Orphanides and Wieland, 2000). As this is crucial to the foolproof way we are going to analyse it in more detail.

Currency depreciation

As currency depreciates, exports competitiveness increases and the price level of imported products rise. The economy can be stimulated out of the liquidity trap as this mechanism can serve as a commitment to a higher price level in the future. Let us make a deeper analysis. First, the Central Bank achieves the desired initial depreciation by announcing that it will buy unlimited amounts of foreign exchange at the announced exchange rate. Since the Central Bank can print any amount of currency and trade it for foreign exchange, it will always be able to fulfil the demand for its currency. Once the expected exchange rate path has shifted up by the initial depreciation, the private sector must believe that the future exchange rate will be higher and thus expect a higher future price level. The Central Bank managed to succeed in demonstrating its commitment to escape the liquidity trap.

The Foolproof way

A recurrent problem in the literature review was related with the difficulty of the Central Bank to make a credible commitment. As such, Svensson (2003) points out three necessary elements for a successful escape from a liquidity trap. First, a commitment by the Central Bank to a higher future price level, second a concrete action by the central bank that proves its commitment and influences the private sector expectations and finally an exit strategy, which defines when and how to get back to normal. In his Foolproof Way, Svensson (2001) goes further and defines three concrete measures to be announced and implemented by the Central Bank for the successful escape: an upward-sloping price-level target path that starts above the current price level, a depreciation and a crawling peg of the currency and an exit strategy where the Central Bank abandons the peg. The Foolproof way should be able to stimulate the economy, as the depreciated currency and the lower interest rate will increase aggregate demand. The consumer price index will also be able to increase as a result of an increased GDP

deflator and increased costs of imported goods due to the currency depreciation. Once the price-level target has been reached, the peg is abandoned, according to the exit strategy and the economy can get back to normal.

The Foolproof way - critique

Svensson's foolproof way is not without its problems. The first obvious problem lies on the fact that currency devaluation with the purpose of stimulating the domestic economy can be considered by the IMF as a "beggar thy neighbour policy". Secondly, there is the usual problem of credibility, in this case credibility of the exchange rate peg. The peg can be compromised by the inflation rate of the trading partners and by an eventually easy-money policy response from the trading partners. Finally all policies have costs and benefits depending on the time when they are implemented and the economic environment that is being lived.

Switzerland

The Swiss franc, along with US treasury bonds, is considered nearly risk-free assets by investors in times of economic turmoil. Therefore, the financial crisis of 2008 led to an immense appreciation of the franc due to increased demand for it. The export sector makes up over 60 percent of its GDP and an increase in the value of the currency hurts the Swiss economy. Therefore, The Swiss National Bank (SNB) undertook monetary measures to devalue the franc. In 2011, as the nominal interest reached the zero lower bound, SNB announced to peg the franc to 1.26 per euro. The plan was to print francs and buy foreign currency to keep the exchange rate fixed at the mentioned level leading to building up of foreign reserves worth nearly 480 billion dollars.

In January 2015, The SNB caught everyone by surprise by suddenly unpegging the franc. Banks and investors lost millions of dollars, and the value of the franc soared by nearly 40 percent within minutes after announcement. The SNB had struggled to maintain the floor for over nearly four years and the opposition against the pegging was increasing in the Swiss population. The Economist identified three main reasons behind the central bank's decision to drop the fixed exchange rate (http://www.economist.com/blogs/economist-explains/2015/01/economist-explains-13). Firstly, as mentioned above, the Swiss

population opposed that SNB had built up massive foreign-exchange reserves. Although the inflation has been very low, the population feared that the large supply of francs would eventually lead to hyperinflation. The pegging, and the massive printing became a political topic, and the Swiss government had announced a referendum regarding the issue in November that year. Thus, it was becoming increasingly difficult to increase foreign-reserves.

Secondly, the European Central Bank (ECB) was expected to (and later it did) introduce quantitative easing that would lead to depreciation of the euro and cause an upward pressure on the franc. Hence, SNB would have to print currency at a higher rate to maintain the floor of 1.26. Given that printing money was already unpopular, it would eventually become difficult to maintain the floor. The third reason was that the euro, to which the franc was pegged, was depreciating against other currencies due to the economic turmoil in Europe in that period. Consequently, franc was also depreciating. In 2014, it lost nearly 12 percent of its value against the dollar. The depreciation boosted exports to other trading partners, such as The USA and India. Therefore, The SNB argued that the franc was not so overvalued, and that maintaining the peg was unnecessary. In an interview with Bloomberg in January last year (https://www.bloomberg.com/news/articles/2016-01-15/switzerland-weathers-the-superstrong-franc), the President of The SNB argued that unpegging was necessary because "the appreciation of the franc would have happened anyway". Furthermore, he added that the reason behind moving so swiftly was that waiting would have caused a worse outcome for the economy. Hence, The Swiss National Bank became one of many central banks that failed to manipulate the exchange rate.

The Czech Republic

Another interesting case study is The Czech Central Bank introducing a floor on the exchange rate of the Czech Koruna and the Euro. The Czech Republic reached the zero lower bound in 2012, and the introduced a floor of 27.00 as a monetary policy tool the following year. The motivation was to avoid deflation and stimulation of the industry of The Republic. Although, The Czech Central Bank drew inspiration from the Swiss National Bank pegging the franc, there is one significant difference in the policy that might affect the outcome

(https://www.tradingfloor.com/posts/not-all-pegs-are-created-equal-3512134). In contrast to the SNB, The Czech-Euro floor is temporary, which is consistent with the model of Svensson. In December 2016, the central bank announced that the floor will be removed in Mid-2017. In addition, the Koruna is not traded at the same scale as the franc. The effects of the floor have been mostly positive. The economic growth rate has increased over the last two years, and the central bank predicts inflation to reach its target of 2 percent within the current year.

However, there is an increasing upward pressure on the exchange rate as the floor enters its final period as the level of foreign reserves has increased over the course of the last year, implying that degree of intervention from the central bank has increased. Speculators expect that the Koruna will appreciate once the manipulation of the exchange rate is ended, and many have deemed it the "trade of 2017" to short euro versus the crown (http://www.dailymail.co.uk/wires/reuters/article-3777543/Czech-central-bank-seen-intervening-end-peg-gets-sight.html), which is contributing to the central bank is increasing its accumulation of foreign reserves. Furthermore, Brexit had an adverse effect on the economic outlook of the EU. Thus, leading to increased supply of the Koruna. Although, The Czech National Bank has signalled its determination to defend the peg, it remains to see whether it will be able to survive its final stage as investors speculate over the opportunity to earn money on the Koruna.

Comparison between The Czech Republic and Switzerland - Two small and open economies

Although, The Czech drew inspiration from the pegging of the franc to the euro, there are some significant differences that must be taken into account. The main difference between the central banks' decisions was the motivation behind the pegging. The SNB announced the pegging mainly to support its export sector. As mentioned above, nearly 60 percent of its GDP is affiliated with the exports, and it is, therefore, dependent on a currency that provides competitive advantage to its export industry. Meanwhile, The Czech had a different motivation. The country was caught in a liquidity trap. The interest rate had reached the zero lower bound, while the real long interest rate was still high. Therefore, there was a threat of deflation. The floor on the currency rate was announced to get out of the liquidity

trap. The motivation of both countries is also the main reason behind SNB announcing a permanent peg while The CNB announced a temporary floor, which is to be removed by mid-2017. We have chosen to compare these countries since both pegged their currencies to the euro in approximately the same period. The euro area was suffering from economic turmoil that affected both countries, and other geopolitical circumstances were similar. However, the outcome of the pegging was different for each country. Switzerland failed to maintain its floor, while it seems that The Czech Republic will be able to maintain it and reach its target of 2% inflation.

Question

As mentioned above, Switzerland has failed to maintain its peg to the euro. Meanwhile, the CNB has been successful, so far, to maintain its floor. There are many reasons behind the failure of the Swiss pegging that need further exploration. Both Switzerland and The Czech Republic complied partially to Svensson's proposal. Although, both of the countries depreciated their currencies, none of them implemented a crawling peg. Both had a floor on the exchange rate without announcing a specific exit strategy that takes into account the likely appreciation of their respective currencies after the peg is removed. In contrast to the model of Svensson, Switzerland did not peg the currency for a fixed time horizon, while the Czech central bank announced that the floor is temporary. The argumentation above discusses that there are many significant differences between the theoretical framework and the practical implementation. Furthermore, there are also dissimilarities between the pegging of both countries. Hence, we explore the following question:

"Theory in Practice – Why didn't the 'Foolproof Way' work in Switzerland? A comparison of Switzerland and the Czech Republic".

Data Collection

Since the financial crisis played a vital role in creating the liquidity trap, our period of study will be from 2007 to present date. There are several aspects of the data that will be needed for further study of the concept. It will be of importance to look at the level of intervention that each central bank did, in order to keep the exchange rate close to the intended floor. Therefore, we will look at the balance

sheets of the central banks to analyse their foreign exchange reserves. The annual report will provide insight into the objectives, goals, commitments and analyses of the past years. We will also need insight into the inflation and price-level data of both central banks. This data will be mainly extracted from each central bank. In addition, since both countries pegged their currency to the euro, data from ECB will also be of significance. We will look at data that is of importance for the value of the euro. Therefore, we will study their balance sheets, inflation and price-level statistics, and the annual reports. For a wider perspective, we could turn to data from the OECD and IMF reports.

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