German Hyperinflation

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Economies may deteriorate for many reasons, some novel and some downfalls would be less difficult to predict. One such cause of economic downturn is the occurrence of a phenomenon of hyperinflation. Hyperinflation is a particular instance where prices are increasing at an out of control rate, and money is being continually printed. The vast devaluation of a given currency along with the increasing amounts of money in the given economy results in people acting in very strange ways with respect to a normally functioning economy. These features commonly associated with hyperinflation do little more than simply describe what occurs during such a crisis.

Many definitions exist of what precisely constitutes hyperinflation, but perhaps the most cited and most widely used definition as well as the consensus definition comes from Phillip Cagan in his 1956 paper on hyperinflation. He states that to consider a given economic situation hyperinflation, the event starts with a price-level increase of 50% or more within a month. The event ends when there have been more than 12 consecutive months of the price level not increasing by 50% or more (Cagan 1956). There is of course debate about Cagan's use of his own metric, as he did not consider certain instances of hyperinflation as such. The most accurate list of hyperinflation crises has been compiled by Steve Hanke and Nicholas Krus in their "World Hyperinflations" paper from August of 2012. This paper cites 56 instances of hyperinflation. The usual metric used to measure the rate of inflation is a consumer price index. In the case of the German hyperinflation crisis, there was a lack of availability of a particular basket of consumer goods with which to make a consumer price index, so instead Hanke and Krus use the wholesale price index.

The crisis of hyperinflation which befell Germany in the 1920s was indeed the first modern instance of hyperinflation to occur in a westernized country. Though this is the case, it is not the worst case and there have been many instances in westernized countries since the 1920s. The particular aim of this paper is to examine one of the contributing factors causing this instance of hyperinflation and how much of the blame is allowable to be placed upon this factor. It would be unwise to attribute a crisis of this magnitude to solely one factor, and only mentioning one of the causes in this paper would also do a great disservice to the economic history and the lessons which can be learned from this economic tragedy.

With the German hyperinflation case, the inflation began in earnest with the beginning of the Frist World War (Rothbard 68, 2008). Governments have a tendency to print more money to finance wars. The German government was no different with how they decided to finance the First World War. This is a costly endeavor. Printing new money does not come without costs and society at large is not made better off through the printing of money. The Cantillon effects are certainly felt as well. The government is the first recipient of the new money and proceeds to spend it on the war effort, but as more and more people receive the new money and spend it, supply does not match the new demand for goods that has arisen out of the increased money supply.

Inflation, as described by Mises in Rothbard's "The Mystery of Banking" occurs in several phases. The first phase of inflation occurs when the government increases the money supply. If the public maintains deflationary expectations, this will keep the price level beneath the rate of increase of the money supply (Rothbard 68, 2008). Governments continue to inflate the currency and eventually public expectations turn inflationary. This brings about the second stage of inflation. The demand for money decreases and causes inflation to have a greater effect on the price level as prices are bid up by the public with the lowered demand to hold money (Rothbard 70, 2008). The money supply continues to increase, but with the difference of public expectations, the rate of inflation is surpassed by the rate of price level increase. This change of expectations leads an economy to the "danger zone" (Rothbard 72, 2008). This causes a shortage of money because people are spending it at such a fast pace. If governments decide to slow down the printing of new money and allow the economy to right itself, expectations will be changed back to either neutral or deflationary. This causes the price level to eventually decrease again. If the government continues to print more money and increase the supply or money to satisfy the high time preferences of the individuals experiencing a shortage of money, this enters the economy into phase three (Rothbard 72, 2008).

Phase three is categorized as the run-away phase, and the beginning of true hyperinflation. The expectations which people hold during such a phase of inflation are worse than inflationary. They expect that the value of the money they currently hold is decreasing as they are not spending it. This exact phenomenon occurred in Germany, especially at the peak of the hyperinflation crisis. Money is spent immediately and goods purchased are thought of as a better storer of value than the money of such an economy. The demand for anything other than money was immediately increased exponentially as the demand for money falls to nearly zero (Rothbard 73, 2008).

These expectations of the public with respect to the direction that the value of money will go in the case of Germany. The money supply during more than doubled just during the duration of the fighting. Prices did not rise at the same rate as the supply of money, indicating phase one of the inflationary cycle. The average person held expectations about the purchasing power of money. The average person expected the price level to return to the pre war level or the 1914 level. These expectations that the public held were very strong, and not all together their fault. The people were told that the war would be over quickly and easily ending in a decisive victory for the German Empire. With these deflationary expectations, the demand to hold money was very high. This moderated the prices of many consumer goods to an extent. People did not immediately spend all of the money they held and their cash balances increased (Rothbard 68, 2008). The increasing cash balances kept the money from having a high velocity and preventing prices from being bid up by the consumers.

The deflationary expectations which people continued to hold gave the government false hope that they would be able to continually print more money to finance different war costs and the price level would increase at a lower rate than the rate of inflation (Rothbard 70, 2008). When the war did draw to a close in 1919, people eventually began to come to the realization that the prices of goods would be unlikely to return to their pre-war levels. The true realization of this truth took more than a year to really take hold in the public eye. The government of Germany following the First World War was socialist in nature, and spent much money, which it didn’t have, on education programs as well as healthcare.

With this realization brings about the second phase in the inflationary cycle, according to Mises (Rothbard 71, 2008). The German economy suffered during the post war years, as will be outlined throughout this paper. The inflationary expectations did manifest themselves in money shortages and the government did concede in printing more money. This ushered in the third phase of the inflationary cycle. Workers were paid two times daily, and their wives were awaiting the money to go and spend on any goods they could get their hands on. This continued until production neared a standstill and there was no possible solution other than a reform for the economy. After such a stabilizing reform usually comes a relapse into worse economic conditions (Rothbard 74, 2008).

The German history leading up to the post-war economy has much to do with the hyperinflation crisis. In fact, it is important to understand the history surrounding monetary policy in Germany from 1871 up until the crisis to grasp fully the magnitude of this crisis. There were several states which banded together to form the German Empire in 1871. Most of these states used coins called the Vereinsthaler in tractions and this Vereinsthaler served as a currency until the unification of the German Empire. The Vereinsthaler was a pure silver coin which weighed 16 and two thirds grams. The German Empire transitioned to a gold standard in 1873, two years following the unification. The German Empire named this gold coin the Mark.

During the years following the unification of the German Empire, especially during the second half of the 1890s, the German Empire saw massive industrialization (Britannica). This was a dramatic shift from the 1880s, where there were mass emigrations from the German Empire. The average number of people who left Germany per year in the 1880s was 130,000, which dropped to an average of 20,000 per year in the mid-1890s (Britannica). Between 1895 and 1907, the workforce making industrial machines doubled from just over half of a million workers to over a million workers. The regions of Berlin and Ruhr were growing rapidly in the amount of industrial workers. Before the unification of the Empire, Britain produced twice as much steel as Germany. This was reversed to Germany producing twice as much steel as Britain in 1914. Exports from Germany in 1873 were 1/3 finished consumer goods and 2/3 unfinished goods. By 1913, Germany exported almost 2/3 finished consumer goods (Britannica).

There was also a shift in the style of life which was lived by the German people. Before the unification of the German Empire, 67% of the people lived in rural areas, but by 1910 this number dropped to 40%. The percentage of the population which was made up of large cities with populations of over 100,000 in the 1870s was 5% but it grew to 20% by 1914. Additionally, by 1913 60% of Germany's Gross National Product came from industrial production. Per capita income also rose from 352 marks at the beginning of the unification of the German Empire to 728 marks just before leaving the gold standard(Britannica). The industrial capabilities of the German Empire were the best in Europe, but the agricultural side of production was not as proficient with 60% of farmers owning less than 5 acres (Britannica). It is safe to say that the industrialization of Germany occurred at a rapid rate given the amount of time it took for such gains to be made. The German Empire also outpaced the economic growth of the other European countries in terms of their productive capabilities.

In 1914, the German Empire transitioned off of this gold standard. The Mark was retroactively named the “Goldmark” to mitigate confusion with the new currency circulated called the “Papiermark”. The papiermark was not backed by any commodity and was simply a fiat currency. This means that it must be accepted as tender for debts and transactions. The German Empire had reasons for leaving the gold standard, and this action of getting off of the gold standard was the causal factor which will be pointed out as a factor of the hyperinflation crisis.

The leading reasoning the German Empire had for leaving the gold standard was to more easily print money to pay for the war effort. Wars are costly and tend to exceed predetermined budgets. There was much propaganda circulated during the war time by the German government throughout the newspapers and other government outlets. One example of this propaganda was the use of slogans like “I gave gold for iron” or “Invest in war loan” (Boesler 2013). The way which gold would be given for iron was to sell the goldmarks back to the government in exchange for the papiermarks, which could be printed on demand to be exchanged immediately for the valuable commodity currency.

Throughout the First World War, there were few hints of inflation occurring as it was hidden through several means. The stock exchange markets in Germany were suspended during the war years so people were unable to see how prices reacted to different news. In this way people were unable to properly see the value of shares traded with respect to the paper currency. Additionally, it was far harder to observe how the foreign exchange rates were moving as it was not as commonly known in those times as it is now (Boesler 2013). The expectation of the German government was that the war would be over rapidly and that the German Empire would expand its borders and in so doing expand their economic and industrial endeavors. These unrealistic expectations were used to justify the risky and unsustainable financial policies which were enacted by the German government.

During the war, nearly two thirds of the standing army deserted and went home to provide for their families. This is a staggering number of deserters, but the number of fighting men was 11 million, or nearly 18% of the total German population (Britannica). There was a massive famine between 1916 and 1917 which disabled the capabilities of the German army during the war. In addition to those deserting the army, nearly 2 million Germans were killed throughout the course of the war. The war did, however, do a great deal to unify the citizens of Germany around the national cause.

Following the conclusion of the war, the stock exchange markets were reopened in Germany which unveiled the true state of the economy, the propaganda had acted as a bandage for a wound far too big. The Treaty of Versailles was also something which adversely affected the German economy. It is important to note that of the countries involved with the First World War, Germany was the one paying reparations to other countries. This logically follows as they were on the losing side of the war, as well as the initiators of the conflict. There was much blame placed on the Treaty of Versailles for the ensuing hyperinflation crisis. Some of the requirements of Germany included the loss of control of many foreign financial holdings and losing colonies. Germany additionally lost territories on the Belgian and French borders. Reparations which were required amounted to 132 goldmarks, which would be 269 billion dollars in today's terms.

Papiermarks were not permitted to be used in the repayment of these reparations. The portion of the Treaty where this was found was titled the "War Guilt Clause" which was punitive in nature (Blakemore 2020). Germany took 92 years to fully payoff the remaining balances of the reparations. The reason for this great length of time was partly due to financial collapse as well as the Second World War. This did not deter the government from printing more papiermarks. The German military was also forced to cut its personnel by several hundred thousand men, which added willing laborers to the supply of labor.

During the year 1920, the price level of goods were nearing 12 times higher than they were before the war. Before the First World War, around half of a typical family's income was spent on food, and after the war, this figure increased to three quarters of the family income. In April of 1919, a family of four spent an average of 60 papiermarks per week on food, this was increased to 230 papiermarks per week by November of 1920. Commonplace food items such as lard, ham, eggs and tea saw a price increase of between 30 and 40 times from before to after the First World War (Boesler 2013).

France was also in a poor economic situation following the conclusion of the first world war, and began demanding that the reparation payments start coming in. The German government claimed it was beyond the realm of possibility to pay such sums at that time. This caused the French to occupy many German ports. The German state of affairs was not good in a political or an economic sense. There were political assassinations which also occurred during this time in Germany. One notable figure who was assassinated was a socialist economist by the name of Erzberger who was in favor of increasing taxation.

Taxes were levied and increased to raise funding for the reparations. The burden of the taxes fell mostly on the lower and middle class families as the upper class camilies spent money in astronomical ways to avoid these increased taxes.

Some notable foreign exchange rates to consider would be the French Franc, the British Pound, and the United States Dollar. Before the war, the United States Dollar bought 4.2 Papiermarks (Sennnholz 2003). Following the war, the Papiermark faired similarly to the British Pound and better than the French Franc (Sennholz 2003). In 1919, the United States Dollar bought 14 papiermarks (Sennholz 2003).

By 1921, though, the British Pound bought 310 papiermarks, and by September of the same year the exchange rate was more than 400 to one. Many average German citizens were selling their papiermarks for foreign currency as it appeared to them a wiser storer of value. People were expecting a further decline in the state of the currency.

At this time, the non banking public began to try to hedge against the inflation by purchasing any and all goods with any available money they had. The demand for money at this time was nearing zero. This caused stores to advertise that they were out of various goods whether or not they were (Britannica). Other stores simply shut their doors between one and four PM. There were limits placed on how much of a given good stores would sell to an individual. Goods were sold for between two and three times higher than their listed price as otherwise they would not stay on the shelf for any period of time. The national bank of Germany was buying foreign currency continually and by November of 1921, the allies collectively agreed that it would be an impossibility for Germany to meet the reparation payment for the year. The prices of goods had doubled between during the second half of 1921 as well (Britannica). By December of 1921, the British Pound bought 751 paipermarks.

During the first nine months of 1922, the weekly basket of goods for a family of four went from 370 papiermarks to 2615 papiermarks. One reason for this continued inflation was that far more businesses tended toward bankruptcy when inflation leveled off in a given period of time, compared when inflation continued (Britannica). Another notable assassination which occurred in summer of 1922 was that of Walter Rathenau, the foreign minister. He wished to pay reparations and this was an unpopular idea among many citizens. This caused the allied faith to dwindle that payments would occur on schedule as the sole motivating official was assassinated during the summer (Britannica). To make the economic state of Germany worse, the French government declared that they would invade the Ruhr region of Germany if a portion of the owed reparations were not paid by the end of 1922. This payment was in the amount of 500 million goldmarks.

It is also important to note that the workers at the Reichbank decided to go on strike and stop printing money in an attempt to limit the governments inflationary intentions.

Wages for the middle class were falling behind inflation during the end of 1922 as well. The working class families were seeing their wages slightly outpace the inflation so they were doing better than many in the middle class (Britannica). During the end of 1922, there was a shortage of marks which led to employers paying their employees in the form of I owe you notes for goods which were produced (Britannica). These I owe you notes were accepted by local individuals as a substitute to the currency.

By the beginning of 1923, France followed through on the threat to invade Germany if the reparation payments were not received. The Ruhr region, which had many of the natural resources of Germany, was under French occupation. Production slowed to a near stand still and increased the scope and scale of the inflation crisis. This region held 85% of the country's coal resources, 80% of the steel and pigiron, 70% of the mineral goods, and 10% of the country's population (Britannica). During the final week of 1922, the papiermark traded against the British pound at 35,000 to 1. The day following the beginning of the French occupation, in the second week of January of 1923, the papiermark fell to 48,000 to 1. By the end of January the papiermark traded at 227,500 to 1 against the pound. Against the United States dollar it traded at 50,000 to 1 (Britannica).

By August of 1923, food became increasingly scarce. There was another strike at the money printing facility. Employers were forced to pay employees by account only. The supply of money in August 1923 was 663,200 billion papiermarks. By November of 1923, there was 400,267,640,302 billion papiermarks, during this period that was an increase of total money supply by a factor of 603,000 times (Brennan 2008). The value of a papiermark in December of 1923 was 1 trillionth of the 1914 goldmark value (Sennholz 2003). The United States dollar was valued at 4.2 trillion marks during the same time, and the American penny could buy 42 billion marks (Sennholz 2003). Practically every good or service imaginable costed in the trillions of marks.

The worst month of the hyperinflation crisis was November of 1923. During this month, prices were doubling every 3.7 days for a monthly total of 29,500% price inflation (Hanke and Krus 2012). The actual hyperinflation period lasted from August of 1922 until December 1923. This amounts to 16 months of the price level increasing by at least 50% (Hanke and Krus 2012).

One may wonder what ended up solving the hyperinflation crisis as the economy spiraled out of control at an ever increasing rate. With inflation being the tool of choice of the German government to attempt to raise funds, what would cause it to come to a halt a month after the single worst month of the crisis. The forcible limits on the ability of the government to inflate the currency are part of the solution, but ensuring this is easier said than done when unemployment rates increased as did bankruptcies when there was a slowing down of inflation.

It took the development of an entirely new form of currency to be issued by the Rentenbank called Rentenmarks. This was a paper currency, similar to the papiermark, but unlike the papiermark, this was a commodity backed money substitute. Due to the nature of various installments of reparations being paid with the available gold in the German economy, the commodities which backed this Rentenmark were land and other industrial goods (Britannica). Though this was a paper note which was not convertible to such commodities, the public had a far higher confidence in this money and it showed when the economy stabilized for a year until the unemployment crisis of 1925. The demand for money increased sufficiently above the levels of the demand to hold papiermarks.

Unfortunately for the German economy, the unemployment crisis of the mid 1920s led to Hitler's rise to power as he was able to capitalize on the consistent unemployment of more than 2 million Germans throughout 1925 and 1926. This mirrors a typical economic recession following such a crisis.

During the inflationary crisis in Germany, there were many different theories of blame and denial voiced by the allies as well as by the German government. The allies claimed that Germany was intentionally destroying their currency to make it less likely they would pay reparations. The German government claimed the exact opposite, that the allies were trying to ruin their currency by demanding such punitive reparations. These allegations on either side did nothing but look to a symptom of a larger problem. The citizens were unified around their country and would opt to listen to their government rather than the allied claims (Brennan 2008). There are several other theories which are voiced with respect to the causes of such a crisis.

The German government also blamed the French, for invading the Ruhr region and halting much of the industrial production occurring in the region (Sennholz 2006). This theory was also believed by the citizens of Germany. The German government also blamed foreign exchange speculators for continually selling the German currency and buying foreign currencies (Sennholz 2006). This claim was echoed by many and the lines of the argument are as follows. People hoard goods when there is a shortage or hoard food in an instance of a famine or drought in the same manner as they sell currency when there is a perceived devaluation of such a currency. This can be attributed to the expectations turning from deflationary to inflationary when the government itself continually printed more money and the public awaking to the notion that prices would not return to a previous level. The built up cash balances were spent in short order following such a revelation, bidding up prices and creating shortages of money.

The governmental officials also flat out denied the existence of any inflationary or economic crisis at some points (Sennholz 2006). As an outsider looking in at the situation, on the surface it seems hard to imagine such a claim being made by a government to its people, although following a reflection of the monetary history of many countries, it begins to seem less far fetched as cover ups of poor monetary policy have frequently been used throughout economic history.

The president of the Reichbank, Dr. Havenstein, indeed embraced any theory that he could to shift blame for poor monetary policy away from him and his monetary regime. Newspapers similarly ran with these claims of directing blame away from the monetary policy enacted by the Reichbank (Sennholz 2006). There is no denying that the claims suggested by governmental officials and newspapers are legitimate problems, but all these entities do when they blame the entire crisis on such things is point to symptoms of the real problem as opposed to pointing to the real cause.

All the while, the government of Germany continued financing all of their expenditures by inflation and printing more money. It was unlikely that such a government would be able to levy an effective tax on a populace which was already doing poorly in terms of the state of the economy. As Keynes notes, an inflationary tax is one that even the weakest government can levy on all citizens, even if it may enforce no other types of policy and a tax which none may easily evade (Brennan 2008). According to Brennan, there would be no other way to finance the debt repayment of the Treaty of Versailles.

Other theories posited come from various sources and are constructed in various ways. The Balance of payment theorists argue that the German external balance was passive because the reparations caused the depreciation of the mark. The depreciation of the mark, they argue, was the cause and not the consequence of the deficit, the increase in the money supply, and the inflation at large (Brennan 2008).

This theory fails to look at individual preferences and take account for expectations which the public held with respect to the demand for money and the future purchasing power expectations. This theory does claim that effects of the change in expectations are in fact the cause. This theory also lacks an account of the inflationary restrictions which disappeared when the money was backed by a commodity and reappeared when the money was once again backed by a commodity.

Phillip Cagan also put forward a model which dealt with variations in expectations of people. He suggested that people had varied expectations for the rate of expectations which account for the variations of real cash balances. He claimed that expectations are adaptive which means that people take into account real data about past inflationary numbers and history and apply them in a forward manner and this reflects what they expect about the future. He believes that the cause of the inflation was the governments fiscal need. During several months of the true hyperinflation, he predicted lower real money balances than were actually observed. He attributed this to rumors of currency reform being spread which led people to hold higher balances during the final months of the hyperinflation crisis. His other theory about why his model was incorrect during these months was that he used the incorrect functional form to derive his money demand function (Brennan 2008).

Flood and Garber pose a theory which is similar to that of Cagan, with a notable difference. Instead of using adaptive expectations, they use rational expectations which better model the final months of the crisis which were the most extreme in terms of the level of price inflation. They deal with the cash balances again building up near the end of November of 1923 by saying people thought it was likely that the government would reform their monetary policy. They believe in the endogenous money supply and the fact that the growth of the governmental debt caused the growth of the overall money supply. They treat the money supply as endogenous rather than exogenous. These two claim that one should focus on the determinants of the money supply rather than money demand. The supply was dependent on the government debt and how much of it the public decided to monetize. There were expectations of lowering inflation near the end of the crisis which caused people to indeed build up their cash balance (Brennan 2008).

One flaw with theory which is a glaring error is the neglect for the demand for money playing a role in the inflationary cycle. The demand for money determines how fast people will spend the money as well as the amount of price increases which will occur. The demand for money is one of the main causal factors that allow governments to continue printing money.

Tullio uses a dynamic model which explains prices, exchange rates, and the supply of money. He argues that the Reichbank passively increased prices to avoid recession. He additionally argued that there is partial endogeneity of the money supply.

Taking again into account the supply of money only paints half of the picture. Purchasing power is determined by both the supply and the demand for money. Supply can be infinite if people have infinitely high demand for money, and in such a case, supply of money would have no effect on the price level.

These theories all take into account the money supply increase in the German economy as a prominent causal factor in the beginning of the inflation crisis which led to hyperinflation. They do not recognize that it may be a consequence of a larger issue, but take it as given that the increase in the supply of money was what caused the inflation. Claims of an endogenous money supply are also to be held in doubt, at best given the conscious decision by governmental actors within Germany to continue to finance the deficit by printing money. This implies an exogenous supply of money.

Returning again to the stabilization of the monetary and price inflation, it is clear that backing currency with commodities increased the public confidence. When observing the historical events which led to stabilization of the currency situation, it is hard not to believe that the exit from the gold standard had something with the beginning of the hyperinflation crisis. Objections to this line of thought may include the comparisons to the French and British economies as they similarly left the gold standard but had different results. The German people had continually inflationary expectations which lowered the demand for money to near zero levels. The fact that the British and French citizens did not experience a crisis similar to this shows that their expectations were more deflationary than the German citizens.

Additionally, these countries were not required to pay reparations in gold currency, these countries did not start the war, and these countries financed the war far less recklessly than the German government. The spending policies of the German government on differing social programs also contributed to the overall spending of money which was declining rapidly in value. To say that the exit of the gold standard had little to nothing to do with this crisis would be leaving out a sizeable factor of this hyperinflationary crisis. The method by which the German government eventually stabilized the currency also speaks volumes to the importance in the minds of the citizens of having a currency which was backed in some form by a commodity.

When studying the history of the German economy including the economic prosperity which was experienced following the unification of the German Empire, it is clear to say that the state of their economy was strong. Their gold standard kept much of the inflation in check and the removal of the gold standard opened the doors wide inflation to ensue. The deflationary expectations of the citizens during and just following the conclusion of the war also helped to keep price levels from drastic increase. There were many factors that led to the ultimate crisis and up until the demand for money dropped to nearly nonexistent levels, the crisis could have been fixed before it got as bad as it did. The eventual issuing of a new currency which was backed by certain commodities served to slow the inflationary tendencies of the government. It is clear that leaving the gold standard did something to the policies enacted by the government and although there are many more factors to hyperinflation than simply whether or not the currency is backed by a commodity, it certainly is a factor which should be considered when evaluating the German hyperinflation crisis.

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