

INSTITUTIONS, EXPERIENCES AND INFLATION AVERSION

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Institutions, Experiences and Inflation Aversion

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Zusammenfassung/ Abstract

Are preferences exogenously given? Or do individual tastes and values evolve endogenously within a particular socio-economic environment? In this paper, we make use of a natural experiment to analyse the role of inflation experiences and institutions in the formation of individual inflation preferences. In particular, we exploit the division of post-war Germany to investigate to what extent the factual non-experience of inflation and 40 years of Communism have affected inflation preferences in East and West Germany. We find that historical experiences have a significant and long-lasting effect on people's preferences. Due to their specific political and economic background, East Germans are significantly more inflation averse than West Germans, even 20 years after reunification.

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Schlagworte / Keywords: endogenous preferences; inflation aversion; natural experiment; Germany

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Evidence from a Natural Experiment

1 Introduction

The economist has little to say about the formation of wants; this is the province of the psychologist.

Friedman (1962, p. 13)

It is an intriguing question whether preferences are exogenously given or whether individual tastes and attitudes evolve within a particular socio-economic environment. Economists' traditional view is that preferences are exogenous and stable (Stigler and Becker, 1977). It was the prevailing opinion that the evolution of preferences does not fall in the realm of economics (Friedman, 1962). The formation of preferences was therefore mainly studied by researchers of other social sciences such as psychologists and sociologists.

Nowadays, many economists have recognized that not taking preference endogeneity into account might limit the explanatory power and policy relevance of economic models: "If preferences are affected by the policies or institutional arrangements we study, we can neither accurately predict nor coherently evaluate the likely consequences of new policies or institutions" (Bowles, 1998, p. 75). Models with fixed preferences would, thus, lead to false predictions due to model misspecification (von Weizsäcker, 1971; Aaron, 1994). For these reasons, the view that economists should leave the study of preference formation to other social sciences has systematically changed over recent years (Palacios-Huerta and Santos, 2004).

In fact, there is ample empirical evidence that preferences are not exogenous to the economic, social and cultural environment and the institutional framework in which these preferences evolved.¹ In a recent study, Voors et al. (2012) conduct field experiments in Burundi and find that the exposure to conflict has a significant and long-lasting effect on social, risk, and time preferences. Malmendier and Nagel (2011) show that individual risk preferences are shaped by macroeconomic history and stock market experiences. Relatedly, analyzing the behavior of US

¹Regarding the theoretical modeling of endogenous preferences see, for example, von Weizsäcker (1971), Palacios-Huerta and Santos (2004), Bar-Gill and Fershtman (2005) or Poulsen and Svendsen (2005).

immigrants, Osili and Paulson (2008) find that the past experience of home-country institutions affects financial decision-making even 28 years after the year of migration. Using the post-war division of Germany as a natural experiment, Alesina and Fuchs-Schündeln (2007) investigate the impact of Communism on people’s preferences for redistribution and state intervention, finding that even ten years after reunification East Germans turn out to be significantly more pro-state than West Germans. Similarly, using laboratory experiments, Ockenfels and Weimann (1999) find that East Germans reveal a significantly lower degree of solidarity than West Germans. As shown by Brosig-Koch et al. (2011) this effect is still present 20 years after the fall of the Berlin Wall. Although this literature review is far from being exhaustive, all these findings indicate that political, economic and social institutions as well as personal experiences affect preferences on the individual level and that these effects are quite persistent.

This paper contributes to this strand of the literature by analyzing inflation attitudes. Given the empirical evidence discussed above, it seems unlikely that people are endowed with a fixed (exogenous) degree of inflation aversion, i.e. people are not born with particular “inflation genes” (Hayo, 1998). Rather, we should expect inflation attitudes to evolve over time, dependent on past and current inflation experiences and the institutional setting by which this process is framed.² The institutional framework includes, for example, central bank design, the indexation of contracts and the communication of a particular inflation culture by the government. The institutional setting, on the other hand, might likewise be affected by past inflation episodes and people’s changing preferences. Figure 1 visualizes the interdependent process by which inflation preferences are formed under this “historical feedback” (Hayo, 1998) mechanism.

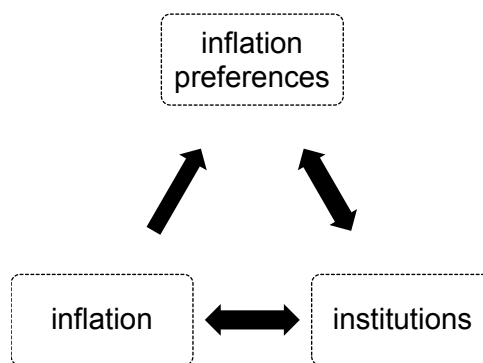


Figure 1 The interdependent process of preference formation.

There are a few studies which focus on particular aspects of this feedback mechanism. De Haan and van’t Hag (1995), for example, test a number of hypotheses regarding the relationship between inflation rates and central bank independence. They find that countries which experienced

²A similar line of argument can also be found in ?.

high inflation rates between 1900 and 1940 have, on average, more independent central banks today, i.e. past experiences shape institutions. The authors also argue that central bank independence alone does not necessarily cause lower inflation rates as the negative relationship between central bank independence and inflation rates might simply reflect people’s underlying inflation preferences. Ehrmann and Tzamourani (2012) concentrate on the relationship between inflation experiences and inflation preferences. Using data from the World Values Survey, they find that hyperinflations have long-lasting effects on people’s inflation attitudes while memories of moderately high inflation fade after about ten years. Relatedly, Scheve (2004) finds that current macroeconomic conditions influence individual inflation attitudes. Hayo (1998) takes a broader perspective and investigates the relationship between current inflation performance, expressed inflation preferences and the institutional environment, namely the degree of central bank independence. He finds evidence of a stability culture in low-inflation countries. In particular, people in low-inflation countries react more strongly to increases in the inflation rate.

In this paper, we make use of a natural experiment to analyze the role of inflation experiences and institutions in the formation of individual inflation attitudes. Following the approach of Alesina and Fuchs-Schündeln (2007), we exploit the division of post-war Germany to investigate to what extent the factual non-experience of inflation and 40 years of Communism have affected inflation preferences. We find that historical experiences have a significant and long-lasting effect on people’s preferences. Due to the specific political and economic background, East Germans are significantly more inflation-averse than West Germans, even 20 years after reunification.

The paper is structured as follows. Section 2 briefly summarizes the existing literature on the determinants of inflation aversion. In Section 3 we present the results of an empirical analysis of the determinants of inflation aversion for Germany as a whole. In Section 4 we describe the German historical background and especially the inflation history in the two parts of Germany. In Section 5 we study whether in fact the German division has left its traces in the revealed degrees of inflation aversion in East and West Germany. Section 6 summarizes and concludes.

2 Review of the Related Literature

Most people dislike inflation. In their judgment, rising prices are not only associated with decreasing purchasing power, higher costs of living and falling real incomes, but also – at a national level – with “political chaos and anarchy” (Shiller, 1997). It has been shown that inflation significantly reduces overall life satisfaction (di Tella et al., 2001) and politicians not keeping track of rising prices are less likely to get re-elected (Paldam, 2008). It is therefore not surprising that in surveys inflation is regularly mentioned as one of the most important national problems. The degree

of inflation aversion, however, varies strongly between individuals and across countries (Scheve, 2004).

Various studies engaged in attempts to uncover the determinants of inflation aversion. While the related literature started out with an early paper by Fischer and Huizinga (1982), the influential work of Shiller (1997) revitalized the interest in the determinants of inflation aversion. Since then, various empirical papers studied this issue, such as ?, van Lelyveld (1999), Easterly and Fischer (2001), Scheve (2004), Jayadev (2006) and, most recently, Berlemann (2011, 2012) and Ehrmann and Tzamourani (2012). However, the empirical findings of these studies are yet quite inconclusive. One might suspect that various factors have contributed to this comparatively mixed picture. First, the existing studies vary heavily in their sample periods and sample countries. Some of the existing studies focus on single countries (see, e.g., Fischer and Huizinga, 1982; Berlemann, 2012) while others study multi-country samples (e.g., Ehrmann and Tzamourani, 2012). Second, the set of employed control variables differs enormously between the various analyses. Third and possibly most important, the data sources which are used to derive measures of inflation aversion vary from study to study. Fischer and Huizinga (1982) as well as Easterly and Fischer (2001) use survey data provided by the Roper Center at the University of Michigan. Shiller’s study (1997) is based on a set of own interviews with students from Brazil, Germany and the United States. ? employs data from the New Democracy Barometer, a special survey conducted infrequently in a number of transition countries. Van Lelyveld (1999) uses a question included in the earlier Eurobarometer surveys; Scheve (2004) combines this sort of data with data from International Social Survey Programme (ISSP). Jayadev (2006) relies solely on the ISSP survey. Berlemann (2011, 2012) employs the newer version of the Eurobarometer dataset. Finally, Ehrmann and Tzamourani (2012) use four waves of the World Values Survey (WVS), which also include a question on the most important issues facing the country. While all employed surveys basically ask for the importance the respondents attach to the goal of fighting inflation, they differ in the way of doing so. In some of the surveys the respondents are asked to decide whether they prefer fighting inflation over lowering unemployment (Fischer and Huizinga, 1982; van Lelyveld, 1999; Jayadev, 2006). In other surveys (such as the WVS and the older Eurobarometer surveys) the question is more open and asks to choose the most important issues facing the country from a list of four items (the so-called Inglehart question): (1) maintaining order in the nation, (2) giving people more say in government decisions, (3) fighting rising prices and (4) protecting freedom of speech. This sort of data is used in Hayo (1998) and Ehrmann and Tzamourani (2012). Other surveys, such as, e.g., the newer Eurobarometer waves, allow to choose from a considerably longer list of items, among them fighting inflation and reducing unemployment (Berlemann, 2011, 2012).

Almost all mentioned studies have investigated the individual determinants of inflation aversion. As shown in Table I, the results for the influence of gender, education, income and individual

unemployment status are rather mixed. On the other hand, there is strong evidence that older respondents are more averse to inflation, which is often explained by the fact that old people are more likely to have lived through periods of high inflation (e.g., the oil crises) and their dependence on nominal pensions which are usually not perfectly indexed for inflation. There is also supporting evidence for the hypothesis that the respondent's political orientation correlates with inflation aversion. In line with Hibbs' (1977) partisan view, rightist or conservative people tend to be more concerned with inflation than leftist respondents in most studies.³

Table I about here

Although individual-level determinants turn out to have quite some explanatory power in the already existing studies, they cannot explain the large cross-country variation in inflation aversion (Scheve, 2004). The latter, however, is more important from a public choice perspective. In democratic societies, aggregate inflation preferences – by some political process, e.g., through elections – translate into political decisions and, thus, influence the adoption of macroeconomic policies or the design of monetary institutions. One factor which might explain the cross-country differences is the prevailing macroeconomic situation in the referring countries. The existing empirical evidence points in the direction that the macroeconomic situation has a strong influence on inflation aversion. In times of high inflation, more people are concerned with inflation than in times of high unemployment and low inflation. However, as Ehrmann and Tzamourani (2012) argue, inflation aversion might also depend on past inflation experiences, at least when inflation rates exceeded a certain threshold. Using survey data from 23 countries, they find that memories of high inflation increase inflation aversion. While the effect of high inflation rates tends to fade after about ten years, memories of extreme events such as hyperinflations (in their paper defined as an annual inflation rate of more than 200 percent) have a long-lasting effect on anti-inflation preferences. Germany's hyperinflation in the 1920s is a prominent example for such an extreme event.

3 Empirical Evidence for Germany

In the first step of our analysis we try to uncover the individual determinants of inflation aversion of the German population as a whole. In order to do so, we make use of data from the German respondents to the Eurobarometer survey. The Eurobarometer survey is a regularly conducted survey on behalf of the European Commission. Since 1973, the Standard Eurobarometer Survey has been conducted twice a year in all EU member states. The primary aim of the survey is

³The simplified representation of political attitudes on a left-right spectrum is not without problems. As reported in Berlemann (2012), in post-communist countries the use of the term "conservative" differs significantly from the one in Western democracies.

to deliver information on the attitudes of European citizens towards Europe, its institutions and policies. Although the survey was subject to certain revisions, a number of standard questions has been asked regularly. Since 2002, the Standard Eurobarometer includes a question on the respondents' individual evaluations of the most important challenges in their country of residence. The survey question reads: "What do you think are the most important issues facing (our country) in the moment?" The respondents can choose up to two items from a given catalogue, which includes the following items: crime, public transport, economic situation, rising prices/inflation, taxation, unemployment, terrorism, defense/foreign affairs, housing, immigration, health care system, education system, pensions, protecting the environment, energy-related issues, others.⁴

In order to construct a proxy for inflation aversion, we generate a binary variable *Inflation MII* that is set to one whenever "rising prices / inflation" was among the two answers to the above question. Otherwise, the dummy variable is set to zero. Note that in choosing the inflation category respondents face a real tradeoff because respondents are restricted to two answers. Thus, our dummy variable measures inflation aversion relative to other goals that were not mentioned by the respondent.

Following the existing literature, we control for a number of socio-demographic variables such as age (in years), gender and marital status. To test for ideological effects we include the self-reported political orientation measured on a scale from 1 (left) to 10 (right) as well as a dummy variable (*Unemployment MII*) that is set to one whenever the respondent mentioned unemployment as one of the most important issues. We also control for highly educated individuals.⁵ Since we have no direct measure of income or wealth, we include a set of controls for several occupational groups, including unemployed persons, retirees and students. We also include controls for the community size the respondents live in.

To control for the macroeconomic conditions we include the unemployment and inflation rate during the months of the respective Eurobarometer wave. While we do not know where exactly a single interview was conducted, the Eurobarometer dataset allows to distinguish between interviews which have been conducted in East and in West Germany. As macroeconomic controls we therefore use the values of unemployment and inflation (averaged over the time the interviews were conducted) in East and West Germany, respectively. Additionally, a financial crisis dummy captures the extraordinary increase in inflation aversion due to a rise in inflation expectations. The crisis dummy is set to one for each wave since 2008.⁶

⁴In the earlier waves of the Eurobarometer surveys, the survey included the Inglehart question. However, the Inglehart question was primarily designed to differentiate between materialistic and post-materialistic values. The enlarged catalogue of answers to the most-important-issue question almost exclusively focuses on materialistic answers and is thus more adequate from our point of view. We therefore refrain from using the answers to the Inglehart question.

⁵The dataset contains information on the respondents' age when they stopped full-time education. We construct a *high education* dummy variable which is set to one for all respondents who stopped full-time education with 22 or more years.

⁶Our results are robust to variations in the definition of the variable.

In total, our dataset comprises 24,985 interviews in 15 Eurobarometer waves between 2002 and 2009. Due to missing data for at least one of the control variables our sample size is reduced to $N = 21,714$ observations. Note that the data set is constructed from repeated cross-sections; it is no panel. A summary of descriptive statistics can be found in the Appendix (Table V).

Table II about here

The estimation results from a logistic regression are shown in Table II. Since the respondents from the same wave and the same region live under the same macroeconomic conditions we estimate the model with clustered standard errors. The dependent variable is a dummy variable indicating inflation aversion, i.e. respondents who picked inflation as one of the two most important issues. We stepwise include socio-demographic variables (Model 1), macroeconomic controls (Model 2) and the financial crisis dummy (Model 3). Significantly positive coefficients indicate a higher probability of mentioning inflation among the most important issues. We argue these individuals to be more inflation averse.

Regarding the personal characteristics, we find that male persons are less inflation averse than females. Moreover, being married reduces the probability of mentioning inflation. One might suggest that married couples are more likely to mention other most important issues, such as housing and education, which reduces the probability of selecting inflation. In addition, we find that people living in larger cities are significantly less inflation averse than people in rural areas. Interestingly, the age variable has no significant effect.⁷ The same holds true for the dummy variable for retired respondents.

Following the traditional partisan view, the political orientation variable should be positive, indicating that rightist people are more likely to mention inflation among the most important issues facing the country. However, the coefficient in all three specifications is negative. However, it is not significantly different from zero once we control for the macroeconomic situation. On the other hand, people mentioning unemployment as a most important issue are significantly less likely to mention inflation. This, however, might to some extent be a technical result as respondents who randomly pick items would also be less likely to choose inflation if they already picked unemployment.

Education tends to have a significantly negative effect on inflation aversion. The highly educated have a lower probability of mentioning inflation among the most important issues. The same holds true for students.

Concerning the respondents' occupation we find that those who most likely have a higher income level are on average less inflation averse. The coefficient becomes smaller the lower the

⁷This result is also robust to the inclusion of a squared age variable.

associated income level, but only the coefficient for the manager category is statistically significant in all three models.

Finally, the macroeconomic situation has a significant influence on the respondent’s probability to mention inflation among the most important issues. As expected, a higher inflation rate increases the degree of inflation aversion. Moreover, inflation aversion was significantly higher during the crisis. However, the effect of the unemployment rate is somewhat peculiar, at least at first sight. The coefficient of the unemployment rate is insignificant in Model (2) and significantly positive in Model (3). As a higher unemployment rate should lower the relative importance of the inflation goal, this finding is somewhat puzzling. However, we will solve this puzzle in Section 5.

Table III about here

To get an impression of the size of the effects, Table III displays the marginal effects of Model (3). The marginal effects describe the change of the predicted probability to mention inflation among the most important issues if the respective variable changes by the value given in Column (3). All other variables are held at their reference values.

As shown in Table III, male respondents have a 4.1 percentage points lower probability to mention inflation than females and married people have a 1.5 percentage points lower probability compared to single persons. Those mentioning unemployment as a most important issue have a 20 percentage points lower probability to mention inflation as well. However, this partly reflects the fact that one of the two “slots” is already reserved for the unemployment item. However, the size of the effect indicates that people prioritizing unemployment are in fact less inflation averse, but the result should be taken with a grain of salt.⁸ Strong effects are found for the variables that indicate the respondent’s (expected) income level. Compared with the reference group, managers, students and highly educated people are much less inflation averse. Their probability to mention inflation is by 7.4, 9.0 and 11.0 percentage points lower, respectively. In relation to the average probability to choose inflation (20 percent), these effects are sizeable. The same holds true for macroeconomic variables. An increase in the inflation rate from 1.4 to 2.2 percent increases the likelihood to pick inflation by 6.3 percentage points. The effect of the financial crisis is even more pronounced as the probability to mention inflation is twice as large during these years. Finally, the puzzling positive effect of the unemployment rate is not only statistically significant, but also noticeable in size.

⁸Having a catalogue of 15 items, a randomly-picking respondent has a probability of 13.8 percent ($1/15 + 1/14$) to pick inflation as one of the two items. Reserving one slot for unemployment leaves him with a probability of only 7.1 percent ($1/14$), which is a difference of 6.7 percentage points. However, if respondents consider only 5 of the 15 items as important (but pick randomly from these), the difference increases to 25 percentage points.

4 Inflation Experiences in Germany

In the previous section we treated the Germans as a homogenous population. However, Germany has been divided into two parts for almost 40 years. Throughout that time, the populations of the two Germanies have been living in completely different political, social and economic systems and, thus, under completely different institutions. Germany is therefore an ideal laboratory to study the effects of these institutions and the experiences made under these institutions on inflation aversion. As Alesina and Fuchs-Schündeln (2007) argue, the division and reunification of Germany constitutes a natural experiment. Using historical data, Alesina and Fuchs-Schündeln (2007) show that before 1945, the regions belonging to East and West Germany were similar regarding their income levels and other economic dimensions, e.g., the share of the population working in industry, agriculture, or commerce (Alesina and Fuchs-Schündeln, 2007, p. 1510). Moreover, historical election results indicate no differences with respect to political views. Thus, differences in inflation aversion between the West and the East German population can clearly be attributed to the treatment, i.e. the differences in the prevailing institutions and the experiences made under these institutions.

Before we turn to an empirical analysis of this aspect it seems to be useful to describe the inflation-related history in (the two parts of) Germany.

Inflation Experiences Until 1948 Until the end of World War II, all Germans share the same macroeconomic experiences. Most notably in our context, the hyperinflation in the early 1920s has destroyed the savings of many households and is, thus, deeply rooted in Germany's collective memory. Despite the fact that today only a few Germans have experienced this era themselves, the hyperinflation in the Weimar Republic is regarded as a main reason for the high degree of inflation aversion in Germany (Shiller, 1997; Ehrmann and Tzamourani, 2012).

Less than ten years later, Germans again faced instable prices, but this time in the guise of deflation. The procyclical austerity policy of then-Chancellor Heinrich Brüning, which was not unaffected by the recent inflationary experiences, accelerated the nascent economic downturn and led to falling prices and a severe increase in the German unemployment rate (Ritschl, 1998).

The Great Depression was followed by Hitler's rise to power. As early as in 1933, the independence of the German central bank – which was *de jure* independent since 1924 – was restricted again, paving the way to unrestrained war financing in the years to come. To prevent inflationary consequences of the subsequent increase in money supply, the newly installed Commissioner for Prices (*Reichskommissar für die Preisbildung*) enacted a general price and wage stop in November 1936.

After the end of World War II, the allied forces basically maintained the price stop in all four occupation zones until 1948. Though curbing inflation, the system of administered prices led to

a critical shortage for most goods, black market prices soared and barter replaced the money economy.⁹ However, during that time “money did not lose value by way of depreciation but it lost significance through an increasing limitation of its usefulness” (Mendershausen, 1949, p. 655).

Divided Germany, 1948–1990 The common economic history of East and West Germans ended in 1948. In March, a new central bank – the *Bank deutscher Länder* – was founded in the Western occupation zones. It was endowed with an unprecedented degree of political independence as a reaction to both the experienced hyperinflation in the Weimar Republic and the misuse of the former *Reichsbank* as a printing press to finance war.¹⁰ On June 20, the Western allies introduced a new currency, the *Deutsche Mark*, and the worthless existing currencies ceased to exist. Prices, wages and rents were converted at a 1 : 1 rate and each person was endowed with an initial amount of 60 Deutsche Mark. Cash holdings, however, exchanged at a *de facto* rate of 100 : 6,50 and government bonds became completely worthless. At the same time, the price stop from 1936 was officially abandoned, paving the way for a market economy.¹¹

After the currency reform and the quick introduction of the new currency, the Soviet occupation zone was likely to be flooded with the old *Reichsmark*, which was still valid in the Soviet zone. As a reaction, on 23 June 1948 a second – separate – currency reform was implemented in the Soviet occupation zone, which has irrevocably sealed the German division. A new currency, the *Deutsche Mark der Deutschen Notenbank*, was introduced. People were endowed with an initial amount of 70 Mark, existing cash holdings were devalued at different, politically motivated conversion rates (see Thieme, 1998). Additionally, illegitimate assets from the years before 1945 were confiscated. During that time, the *Deutsche Notenbank*, the later central bank of the German Democratic Republic, was founded. In sharp contrast to its West German counterpart, however, the East German central bank was more or less directly controlled by the government.¹²

The division into two German states in 1949 created two distinct economic environments. While West Germany established a social market economy and experienced high growth rates during the 1950s, the Soviet Union introduced a socialist planned economy in the East. Most importantly, the German division also created very different inflation histories. While prices in West Germany mostly followed the laws of supply and demand, they were practically held constant in the socialist East.

⁹Mendershausen (1949, p. 652) describes the situation as follows: “Thus, in the midst of currency, supply and demand conditions that would certainly have produced price inflation in a market economy, there remained a fairly high degree of price discipline and stability under price control. But the economic incongruity of the situation produced changes in the methods of distribution, a limited black market and a widespread system of reciprocal exchanges of goods and services.”

¹⁰The new central bank was always independent from the German government and achieved independence from the Allies in 1951.

¹¹For further details on the monetary reform see, e.g., Buchheim (1988, 1998), Mendershausen (1949) and Zündorf (2006).

¹²Government and central bank were closely connected. Pursuant to section 6 (2) of the “Law on the German Central Bank”, for example, the central bank president was part of the East German government.

Directly after the currency reform in June 1948, the price index in West Germany rose by about 14 percent until the end of the year. This increase reveals the degree of suppressed inflation due to the enacted price stop from 1936. Thereafter, the general price level fell until 1950. In 1951, prices again increased by about 10 percent (Zündorf, 2006, p. 57ff). This development posed a serious risk to the young democracy, whose success was basically measured by the price stability of basic goods (Zündorf, 2006, p. 58). The economic recovery during the 1950s, however, improved the living standards and, thus, led to increased acceptance of the market economy.

The West German inflation performance after this transition period, however, was outstanding. Between 1956 and 1990, the annual inflation rate ranged between -0.1 and 7.0 percent (see Figure 2) and on average the inflation rate was only 3.2 percent, which is very low compared to other industrialized nations. During the two oil crises in the 1970s and early 1980s, the German inflation rate jumped to more than 6 percent, but compared to other countries it remained on a comparatively low level.¹³ Although the Bundesbank thus achieved an excellent inflation performance, the population in West Germany nevertheless experienced inflation to some extent and learned to adapt to it.

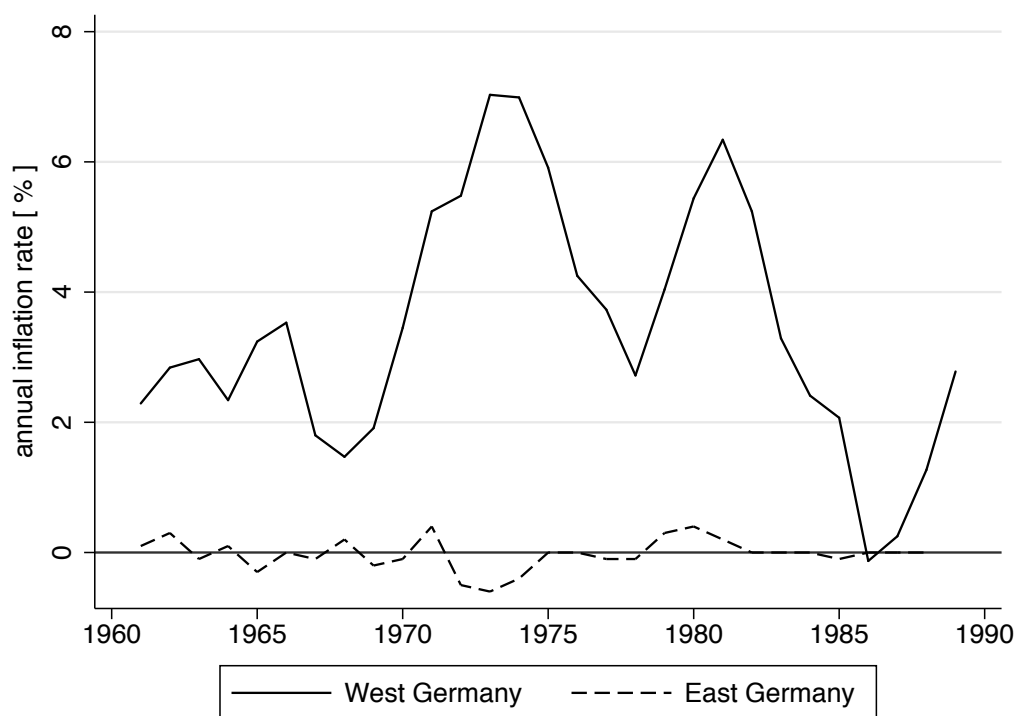


Figure 2 Inflation in East and West Germany.

¹³During that time, other countries like France, Great Britain or Italy experienced two-digit inflation rates.

Inflation rates in East Germany, on the other hand, were very close to zero (Figure 2).¹⁴ As in many socialist countries, stable and low prices were propagated as a major political goal and many people perceived it as a promise by the government (Schevarado, 2006, p. 238). Hence, price increases would likely have caused unrest in the population. Schevarado argues that in East Germany “the protection from rising prices seems to be more important to the people than the ‘freedom’ of consumption” (Schevarado, 2006, p. 238, *own translation*).

As in most planned economies, official prices in East Germany were set by a central agency (*Amt für Preise*), which was directly responsible to the government. As agreed by the East German government in February 1953, most prices were held fixed for a long time (Schevarado, 2006). After a strong fall in consumer prices from 1950 to 1960 by about 100 percent, the price level remained almost constant. From 1960 to 1968 prices increased by only 0.3 percent.¹⁵ Between 1970 and 1988, the price index for food, drink and tobacco rose from 100 to 102, an average annual increase of 0.1 percent. In the same period the overall consumer price index fell from 100 to 99.4.¹⁶

Altogether, the inflation experiences of people formerly living in East Germany was dominated by constant consumer prices, especially for goods fulfilling basic needs. In fact, many East Germans still remember the former prices of goods such as bread, butter or coffee. Moreover, rents and prices for food made up a comparatively small share of consumption expenditures.

Reunified Germany, the 1990s The division of Germany ended with the fall of the Berlin Wall and the subsequent reunification in October 1990. After 1923 and 1948, East Germans faced another currency reform. The monetary union in July 1990 marked the end of the East German money and the Bundesbank took over sole responsibility for monetary policy decisions. The East German currency was mostly converted at a 1 : 1 conversion rate. The same was true for wages, rents and other regular payments. The monetary union and the end of the East German *Mark* “meant the introduction of a modern financial and banking system [...] together with the adoption of a stable, convertible and high-reputation currency” (von Hagen, 1993). However, the new currency also came with rising prices. Between January 1991 and January 1992, the all-German price level rose by 5.7 percent. In 1992 and 1993, the consumer price index increased by 5.1 and 4.4 percent, respectively. However, especially in the first years after reunification inflation in East Germany was somewhat higher in East Germany. After 1993, Germany returned to a low

¹⁴Although official inflation was very close to zero, attempts were made to measure “hidden” or “repressed” inflation in planned economies (Zwass and Westphal, 1978; Nuti, 1986; Keren, 1987; van der Lijn, 1990). These forms of inflation, however, are unlikely to affect the degree of inflation aversion we have in mind, i.e. a rising price level.

¹⁵Statistical Yearbook of the German Democratic Republic (1969, p. 354). Available online (in German) under <http://www.digizeitschriften.de/dms/toc/?IDDO0C=555819>. For a critical view of data from socialist countries see Schevarado (2006, pp. 241–246).

¹⁶Statistical Yearbook of the German Democratic Republic (1989, pp. 280–283).

inflation period. Prices in East and West Germany rose on average by about 1.5 percent since 1994. Regional differences in inflation rates have been negligible throughout that time.

5 Inflation Preferences in East and West Germany

In order to find out whether the described differences in institutions and experiences made under these institutions have left their traces in the preferences towards fighting inflation we vary our empirical analysis we conducted in Section 3. As Alesina and Fuchs-Schündeln (2007), we choose the simplest and most obvious way to do so by simply adding an *East* dummy to our baseline regression from Section 3. The dummy variable indicates whether the interview was conducted in the former area of East Germany or not.¹⁷ Table IV displays the results from the extended model including all variables from Model (3) plus the East dummy.

Table IV about here

The inclusion of the East dummy leaves most of the earlier results unaffected. In fact, sign and statistical significance of all socio-demographic variables remain unchanged; the marginal effects of these variables vary only slightly. However, adding the East dummy strongly affects the results for the variables describing the macroeconomic situation. The coefficient of inflation remains highly significant and is still positive. However, the marginal effect of inflation decreases. The marginal effect of the crisis dummy decreases even stronger, but remains positive and at least marginally significant. The coefficient of the unemployment rate changes its sign and now becomes negative and highly significant. Different from the earlier presented empirical evidence, this finding is in line with the theoretical prediction, thereby indicating that the model, not differentiating between East and West Germans, was misspecified.

However, the main result from Table IV is that respondents in East Germany turn out to be more inflation-averse than the West Germans. Even after controlling for several socio-demographic characteristics and differences in the macroeconomic environment, we find a positive and statistically highly significant effect. Moreover, the East-West difference in inflation aversion is sizeable. Compared to West Germans, respondents in East Germany have a 25 percentage points higher probability to mention inflation among the most important issues facing the country. In absolute

¹⁷While we have information on the place where the interview was conducted – East or West Germany – the Eurobarometer data contain no information on the respondents’ place of birth. We, therefore, do not know whether a respondent in the East German survey is an East German by birth or a West German who just moved from the West to East. The same holds true for East Germans in the West. Between 1991 and 2006, about 2.5 million people (16.6 percent of the East German population) migrated from the East to the West and about 1 million (2.5 percent) in the opposite direction (Fuchs-Schündeln and Schündeln, 2009). This intermixture of the East and West German population should – if at all – reduce differences between respondents from both parts of the country. Thus, if we find differences in inflation aversion between the respondents to interviews conducted in East and West Germany this factually strengthens the result.

terms, the East effect is larger than the effect of changing the unemployment rate from 16 to 11 percent.¹⁸

Our empirical results strongly indicate that institutions and the experiences made under these institutions have a long-lasting effect on inflation aversion. While the dramatic experiences with inflation until 1948 have most likely increased inflation aversion in Germany (Ehrmann and Tzamourani, 2012) these experiences obviously cannot be the source of different attitudes in East and West Germans since all Germans share them. The same holds true for the inflation history after German Reunification. Inflation rates in both parts of Germany were quite similar and too low to persistently affect inflation attitudes in the long-run (Ehrmann and Tzamourani, 2012). The difference in individual inflation attitudes in East and West Germany (which cannot be explained by other macroeconomic or personal determinants) are, therefore, most likely due to the differing experiences between 1948 and 1990.

At first sight the effect of the communist era in East Germany on inflation attitudes is surprising. One might expect that a population which never made negative experiences with the inflation phenomenon exhibits a lower degree of inflation aversion than a population which is exposed to inflation. However, our results indicate that the institutions under which expectations are made might have a strong and long-lasting effect on preferences. The East Germans lived in a planned economy where prices were held constant by the government. As the East German government promoted stable prices as a high-priority policy objective and a major advantage of the planned economy, there was no inflation risk at all.¹⁹ On the contrary the West Germans lived in a market economy with inherent inflation risk.²⁰ While inflation in West Germany was comparatively low throughout most of the time of German division, the West Germans nevertheless learned to understand inflation and the ways to cope with it (e.g. by using indexed contracts). After German Reunification the East and West Germans made their experiences under the same institutions and also faced very similar inflation. While the institutional setting did not change (by much) for the West Germans, the institutional setting for the East Germans switched considerably. While especially the political features of the West German system were attractive for large parts of the East German population, the economic consequences of the market economy and especially the inherent risks of the market economy were not uniformly perceived as an improvement. While many East Germans agreed that the market economy is a precondition for economic prosperity, the inherent

¹⁸This finding explains why the unemployment rate showed the “wrong” sign in our previous regressions. Since unemployment rates in East Germany were considerably higher than in West Germany throughout the entire sample period, the unemployment rate absorbed the higher level of inflation aversion of the East Germans and therefore showed a positive sign.

¹⁹While price stability was also an important goal of West German economic policy, guaranteeing price stability was delegated to the highly government-independent German Bundesbank and not an issue under primary control of the elected government. Although the German Bundesbank did a marvellous job in fighting excessive inflation, market prices were flexible and inflation was not absent for long periods of time.

²⁰Interestingly enough, as a consequence of the slightly increasing nominal income at constant prices in East Germany the purchasing power in East Germany increased more rapidly than in West Germany. See ?.

and formerly non-existent risks of free markets, most prominent among them the unemployment and the inflation risk, are often perceived as huge threats. We argue that the materialization of inflation risk in the early 1990s contributed much to the strong anti-inflationary preferences we find for the East German population.²¹

The differences in inflation aversion between East and West Germans are not only statistically significant and large in size. Finding such differences even 20 years after reunification also indicates that the effect of institutions can be quite long-lasting. In terms of persistence, the effect of the German division is comparable to the experience of hyperinflations, which also have a long-lasting effect on individual inflation preferences (Ehrmann and Tzamourani, 2012). Moreover our findings are in line with other studies which showed that unique personal experiences can have a permanent effect on individual preferences (e.g., Osili and Paulson, 2008; Brosig-Koch et al., 2011; Voors et al., 2012).

Obviously, some respondents in our sample were born after German Reunification and thus did not make any own experiences in one of the two Germanies. Moreover, a significant fraction of respondents in our sample was comparatively young when Germany was reunified. One might suspect that these respondents are much less influenced by the two differing institutional settings prevailing before German Reunification. Interestingly enough, when repeating the estimations for the subgroup of respondents which were younger than 20 years in 1990 the regression results remain almost unaffected. The dummy for East German respondents remains numerically stable and highly significant.²² We might take this as an indication that the attitudes and values of both East and West Germans transmit from one generation to the next. The differences in inflation aversion between East and West Germans are thus likely to persist in the future.

6 Summary and Concluding Remarks

In this paper we study whether the degree of individual inflation aversion depends on the political and economic institutions under which people make their economic experiences. In order to do so we exploit the division of Germany between 1949 and 1990 as a natural experiment. Using Eurobarometer survey data from 2002 to 2009, we find that East Germans tend to be much more inflation averse than West Germans, even after controlling for socio-demographic factors, occu-

²¹A possible alternative explanation of the finding that the East German population turns out to be much more inflation averse could be seen in the fact that inflation in the first two years after German Reunification turned out to be significantly higher in East than in West Germany. According to the statistics of the Federal Statistical Office of Germany (Statistisches Bundesamt) the East German inflation rate was 13.4 percent in 1992 and still 10.6 percent in 1993 while inflation in West Germany was only 3.9 and 3.6 percent in these years. However, this finding is very unlikely explaining our findings. As the study by Ehrmann and Tzamourani (2012) shows, only excessive inflation rates of more than 200% tend to remain in the memories for periods longer than ten years. As the earliest data we use for our estimations are from twelve years after reunification and the inflation rates in East Germany were still comparatively low there is little reason to believe that the short period of differing inflation experiences in the aftermath of German Reunification is the driving force behind our empirical results.

²²The results are available from the authors on request.

pation and the macroeconomic situation. We attribute this result to the specific experiences the East and the West Germans made under the institutions in both parts of the formerly divided Germany. In East Germany price stability was among the most important political goals. As a consequence, the communist regime basically fixed prices in the East German command economy. Therefore, inflation was almost absent in the German Democratic Republic for almost 40 years. Throughout the same time, the West Germans collected experiences with the market economy, fluctuating prices and variable, although on average comparatively low inflation. When Germany was reunified in 1990 and West Germany's currency was introduced in East Germany, East Germans were confronted with a completely different institutional setting. As a consequence of the introduction of the West German market economy the East German population was suddenly exposed to economic risks such as inflation. We argue that this change in the institutional setting is the primary reason for the persistently high levels of inflation aversion in East Germany we find in our empirical analysis. We interpret this finding as supporting evidence for the hypothesis that people are not born with a fixed set of "inflation genes" (Hayo, 1998), but rather form their inflation attitudes within an interdependent system of inflation preferences, inflation experiences and institutions.

Our results support the view that preferences are at least in the long-run not necessarily constant, as it is often assumed in the economic literature. Institutions and the experiences made under these institutions might have a strong and long-lasting effect on the formation of preferences. While the assumption of fixed preferences is often a viable and helpful simplification, one should nevertheless consider the case that the policies and institutions chosen might have a feedback effect on preferences. Neglecting them might lead to misleading model predictions and wrong policy implications.

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A Tables

Table I Results on the determinants of inflation aversion

	socio-demographics						national	
	male	age	pol	edu	inc/w	ind u.	unemp	infl
Fischer/Huizinga (1982)	(+)	(±)		(±)	(+)		–	+
Schiller (1997)		(+)						
Hayo (1998)								+
van Lelyveld (1999)		+	+	+	+	(±)		
Easterly/Fischer (2001)	(+)	+		–	–	(+)		
Scheve (2004)	+	+	+	(–)	+	–	–	+
Jayadev (2006)	+	+	+	+	+	–		
Ehrmann/Tzamourani (2011)	–	(±)	(±)	(–)	–			(+)
Berlemann (2011)								+
Berlemann (2012)	–	(+)	–	–	(±)	(–)	–	+

Notes: +/– designate a positive/negative effect on inflation aversion, parentheses indicate coefficients that are not significant at the 10% level. (±) marks mixed results. *pol* is political orientation (higher values stand for a more rightist attitude); *inc/w* is income/wealth; *ind u.* is individual unemployment, *unemp* is unemployment rate; *infl* is inflation rate. *Example:* Fischer and Huizinga (1982) find a positive, but non-significant effect of individual income/wealth on inflation aversion.

Table II Determinants of inflation aversion in Germany

	Model 1		Model 2		Model 3	
	coef.	s.e.	coef.	s.e.	coef.	s.e.
personal characteristics:						
gender: male	-0.222***	(0.038)	-0.202***	(0.039)	-0.202***	(0.039)
age	0.000	(0.002)	-0.001	(0.002)	-0.001	(0.002)
retired	0.076	(0.091)	-0.086	(0.096)	-0.087	(0.096)
married	-0.084**	(0.038)	-0.074*	(0.040)	-0.074*	(0.040)
small/middle town	0.086**	(0.042)	0.037	(0.044)	0.037	(0.044)
large town	-0.097**	(0.049)	-0.137***	(0.051)	-0.136***	(0.051)
ideology:						
political orientation	-0.051***	(0.010)	-0.013	(0.011)	-0.012	(0.011)
MII: unemployment	-1.238***	(0.036)	-0.988***	(0.039)	-0.987***	(0.039)
education:						
student	-0.292**	(0.117)	-0.443***	(0.120)	-0.446***	(0.120)
high education	-0.503***	(0.051)	-0.542***	(0.053)	-0.542***	(0.053)
occupation:						
manager	-0.273***	(0.096)	-0.365***	(0.100)	-0.366***	(0.100)
self-employed	0.047	(0.105)	-0.128	(0.110)	-0.130	(0.110)
other white collar	0.056	(0.094)	-0.117	(0.098)	-0.118	(0.098)
manual worker	0.237***	(0.084)	0.049	(0.087)	0.046	(0.087)
unemployed	0.300***	(0.096)	0.081	(0.101)	0.077	(0.101)
macroeconomic situation:						
unemployment rate			0.007	(0.024)	0.041**	(0.018)
inflation rate			0.280**	(0.125)	0.374***	(0.089)
financial crisis					1.036***	(0.186)
no. of observations	21,714		21,714		21,714	
AIC	19,867.985		18,770.565		18,751.324	
R-square (Hosmer/Lemeshow)	0.070		0.122		0.123	
R-square (Cox/Snell)	0.066		0.113		0.114	
R-square (Nagelkerke)	0.106		0.180		0.182	

Notes: Logit regression. Dependent variable: Inflation MII. Clustered standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, 10% level. Reference group for “small/middle town” and “large town” is “rural area/village”; reference group for occupations is “house persons”. Constant included, but not shown.

Table III Determinants of inflation aversion in Germany: marginal effects

	(1) marg. effect	(2) ref. value	(3) change
personal characteristics:			
gender: male	−0.041***	0.0	1.0
age	−0.005	48.0	18.0
retired	−0.018	0.0	1.0
married	−0.015*	0.0	1.0
small/middle town	0.008	0.0	1.0
large town	−0.028***	0.0	1.0
ideology:			
political orientation	−0.004	5.0	1.7
MII: unemployment	−0.199***	0.0	1.0
education:			
student	−0.090***	0.0	1.0
high education	−0.110***	0.0	1.0
occupation:			
manager	−0.074***	0.0	1.0
self-employed	−0.026	0.0	1.0
other white collar	−0.024	0.0	1.0
manual worker	0.009	0.0	1.0
unemployed	0.016	0.0	1.0
macroeconomic situation:			
unemployment rate	0.038**	11.3	4.6
inflation rate	0.063***	1.4	0.8
financial crisis	0.209***	0.0	1.0

Notes: Results based on Model (3) in Table II. Column (1) presents marginal effects of a discrete change by the value given in Column (3) when all other variables are fixed at their reference value given in Column (2). ***, **, * indicate statistical significance at the 1%, 5%, 10% level. For further information, see Table II.

Table IV Inflation aversion in East and West Germany (Model 4)

	(1) coef.	(2) s.e.	(3) marg. effect	(4) ref. value	(5) change
east dummy	1.652***	(0.413)	0.254	0.0	1.0
personal characteristics:					
gender: male	-0.201***	(0.039)	-0.031	0.0	1.0
age	-0.001	(0.002)	-0.004	48.0	18.0
retired	-0.088	(0.096)	-0.013	0.0	1.0
married	-0.074*	(0.040)	-0.011	0.0	1.0
small/middle town	0.036	(0.044)	0.006	0.0	1.0
large town	-0.138***	(0.051)	-0.021	0.0	1.0
ideology:					
political orientation	-0.012	(0.011)	-0.003	5.0	1.7
MII: unemployment	-0.988***	(0.039)	-0.152	0.0	1.0
education:					
student	-0.448***	(0.120)	-0.069	0.0	1.0
high education	-0.542***	(0.053)	-0.083	0.0	1.0
occupation:					
manager	-0.368***	(0.100)	-0.057	0.0	1.0
self-employed	-0.136	(0.110)	-0.021	0.0	1.0
other white collar	-0.120	(0.098)	-0.018	0.0	1.0
manual worker	0.043	(0.087)	0.007	0.0	1.0
unemployed	0.073	(0.101)	0.011	0.0	1.0
macroeconomic situation:					
unemployment rate	-0.144***	(0.049)	-0.101	11.3	4.6
inflation rate	0.291***	(0.075)	0.038	1.4	0.8
financial crisis	0.399*	(0.218)	0.061	0.0	1.0
no. of observations	21,714				
AIC	18,740.414				
R-square (Hosmer/Lemeshow)	0.123				
R-square (Cox/Snell)	0.114				
R-square (Nagelkerke)	0.182				

Notes: Column (1) presents coefficients from a logistic regression. Clustered standard errors in parentheses. Column (3) presents marginal effects of a discrete change by the value given in Column (5) when all other variables are fixed at their reference value given in Column (4). ***, **, * indicate statistical significance at the 1%, 5%, 10% level. For further information, see Table II.

B Descriptive statistics

Table V Descriptive Statistics

	mean	s.d.	min	max
MII: inflation	0.199	0.839	0	1
east dummy	0.388	0.487	0	1
personal characteristics:				
gender: male	0.487	0.500	0	1
age	48.374	18.237	15	97
retired	0.295	0.456	0	1
married	0.519	0.500	0	1
rural area/village			0	1
small/middle town	0.434	0.496	0	1
large town	0.270	0.444	0	1
ideology:				
political orientation	4.955	1.749	1	10
MII: unemployment	0.619	0.486	0	1
education:				
high education	0.207	0.405	0	1
student	0.071	0.257	0	1
occupation:				
manager	0.112	0.315	0	1
self-employed	0.060	0.238	0	1
other white collar	0.084	0.278	0	1
manual worker	0.221	0.415	0	1
home person	0.063	0.243	0	1
unemployed	0.093	0.291	0	1
macroeconomic situation:				
unemployment rate	11.295	4.569	6.0	19.4
inflation rate	1.402	0.839	-0.3	3.0
financial crisis	0.244	0.429	0	1

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