

Who Cares about Inflation?

Empirical Evidence from the Czech Republic

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Abstract Most central banks around the globe have the primary task to fight inflation. In the light of the fact that at least moderate inflation turns out to have little effect on the economy this is somewhat surprising. In order to understand why many countries have installed central banks which (almost exclusively) focus on fighting inflation it is necessary to understand why people care about inflation. However, comparatively little knowledge is yet available on the individual determinants of inflation aversion. Up to now, empirical (and quite inconclusive) evidence is available for a number of large Western democracies. Moreover, the evidence is mostly drawn from pure cross section data. Thus, it is yet unclear in how far the results depend on the prevailing macroeconomic situation and can be generalized. In this paper we study the individual determinants of inflation aversion in the Czech Republic. Using data from 11 waves of the Eurobarometer survey we find age, political orientation, education and the macroeconomic situation to have significant effects on the revealed preferences towards fighting inflation while income seems not to play a significant role.

Keywords Inflation, inflation aversion, preferences

JEL classification E31, E61

1. Introduction

Throughout the last 80 years, the Czech Republic's economy has experienced a remarkable development. Before World War II, Czechoslovakia ranged among the wealthy nations with GDP per capita approximately on the level of Austria and Belgium (Dyba and Svejnar 1991). However, under the communist regime the planned economy lost this position and fell back to the level of Venezuela and Gabon by the end of the 1980s. Thus, when the Velvet Revolution took place in 1989 Czechoslovakia's economy was in a bad condition. Moreover, in 1993 and thus only a few years after the collapse of the communist regime, Czechoslovakia peacefully dissolved into its constituent states, the Czech Republic and the Slovak Republic. Since then, the Czech Republic experienced a remarkable good economic development. In the time between 1995 and 2010, the Czech per-capita GDP rose by some 45% and thus converged quite a bit towards central European economies like Belgium (23%) and Austria (28%).¹ While the Czech

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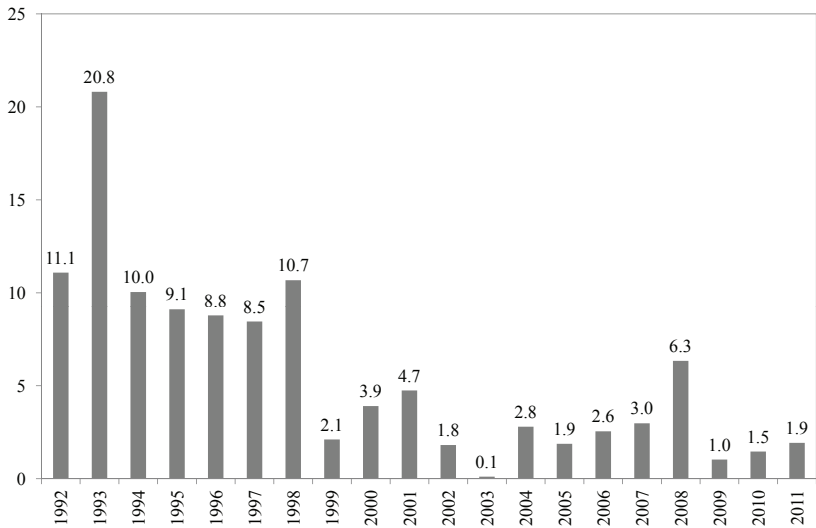
¹ Own calculations based on real per-capita GDP data provided by the FRED database of the Federal Reserve Bank of the United States.

level of per-capita GDP was 57% of the one of Germany in 1995, it increased to 69% in 2010.

The citizens of the Czech Republic also experienced various quite different inflation regimes. Throughout the communist era, Czechoslovakia had a centrally planned economy. Prices were not allowed to move freely but were held at very low levels. Thus, official inflation rates were quite low throughout the period of 1970–1989 (Commander 1992). However, since prices were not market clearing they can hardly be compared to inflation rates in market economies. Due to the existing price regulations there was a good deal of suppressed inflation. Drabek et al. (1993) estimate suppressed inflation in Czechoslovakia in the period between 1985 and 1989 to be slightly smaller than 5%. Besides, there was a tendency to deliver goods with lower quality at the same price, a phenomenon which is called hidden inflation. The estimations of Drabek et al. (1993) indicate that hidden inflation ranged in between 0.5 and 2% in between 1985 and 1989. Thus, while both suppressed and hidden inflation played a significant role in Czechoslovakia's planned economy, both problems were less severe than in other transition countries.

Soon after prices were deregulated after 1989, inflation started soaring. The Czechoslovakian and after 1993 the Czech Central Bank experimented with exchange-rate pegs and elements of monetary targeting. However, these attempts were not successful in bringing down quickly rising inflation. In the first half of the 1990s, annual inflation rates fluctuated around 10% with a peak of more than 20% in 1993 (see Figure 1). After the currency turmoil of May 1997, the Czech National Bank switched to managed floating. However, in December 1997 the Czech National Bank decided to opt for an inflation targeting regime. This strategy turned out to be quite successful; in the period in between 1999 and 2011 (which includes the worldwide financial crisis) average inflation amounted to only 2.6%.

It is well known that disinflationary processes are often accompanied by a rise of unemployment. The fact that the Czech Republic nevertheless undertook serious attempts to bring down inflation to the level of the Western democracies indicates that the citizens of the Czech Republic are quite inflation averse. Inflation aversion is the result of the expected effects of both anticipated and unanticipated inflation. The effects of inflation on microeconomic behavior and macroeconomic outcomes have been subject to excessive discussions among economists (see e.g. Briault 1995 and Edey 1994). It is quite uncontroversial that higher inflation leads to one to one increases in nominal wages or nominal interest rates, provided that there are no institutional barriers to adjustments. Most economists will also agree that inflation causes different sorts of transaction costs such as shoe-leather costs, menu costs or bureaucratic costs. However, there is no common agreement on the effects on economic growth and/or unemployment and the existing empirical evidence is somewhat mixed (see e.g. Kormendi and Meguire 1985; Grimes 1991; Barro 1995; Sarel 1996). Inflation might also have redistributional effects (wage-lag hypothesis, transfer-income-lag hypothesis, debtor-creditor hypothesis), but again the empirical evidence delivers yet no clear picture (Li and Zou 2002). Altogether one might conclude that at least the costs of moderate inflation are comparatively low. The primary costs resulting from moderate



Source: Eurostat

Figure 1. Inflation in Czechoslovakia/Czech Republic, 1992–2011

inflation can be seen in the opportunity costs of holding cash. The costs are typically measured by the area under the function of money demand corresponding to the dead-weight loss of holding less money than intended in the absence of inflation. According to estimations of Attanasio et al. (2002), the costs of 10% inflation range in between 0.1 and 0.8% of consumption.

Nevertheless, considerable empirical evidence from various countries is now available in favour of the hypothesis that people care about inflation. While Shiller (1997) draws this conclusion from surveys he conducted in three countries, Berlemann (2011) employs Eurobarometer data to come to a similar result. When studying happiness data from 12 European countries and the United States DiTella et al. (2001) find people to be significantly happier when inflation is low.

Up to now, comparatively few attempts have been undertaken to study the determinants of inflation aversion on the individual level. Most of these studies have focussed on a small number of highly developed Western democracies. Almost no empirical evidence is yet available for transformation countries.² Moreover, the existing empirical evidence has yet typically been derived from cross section data. It is thus unclear whether the results are driven by the macroeconomic circumstances at the time when the survey was conducted.

This paper focuses on studying the determinants of inflation aversion on the individual level in the Czech Republic. The Czech Republic is an interesting laboratory since—as outlined earlier—the Czech citizens have experienced quite different infla-

² An exception is the recent study by Berlemann (2012) which is concerned with the determinants of inflation aversion in the Baltic countries.

tionary regimes in a comparably short period of time. In order to learn about the factors driving individual inflation aversion, we employ 11 succeeding waves of the Eurobarometer Survey. After pooling the responses and controlling for the macroeconomic circumstances at the time when the survey was conducted we study the influence of possible individual determinants of inflation aversion such as socio-demographic factors, education, political orientation and income.

The paper is organized as follows. Section 2 briefly reviews the related literature. In Section 3 we describe the dataset and deliver some descriptive statistics. In Section 4 we briefly describe the estimation approach and present the estimation results. The paper closes with a brief summary of the main results.

2. Review of the related literature

This section delivers a review of the empirical literature³ on the factors determining individual inflation aversion. The existing studies made use of different databases for this purpose. Fischer and Huizinga (1982) base their study on U.S. data provided by the Roper Center at the University of Michigan. The data covers 5 different survey waves⁴ of the survey which are analyzed separately. Easterley and Fischer (2001) use an international dataset for their study. The employed survey data was collected by the Roper Starch Worldwide Company during February to May 1995 in thirty-eight countries. Half of the sample countries were industrialized, the remaining half were developing and transition countries. Scheve (2004) employs data from two waves of the Eurobarometer Survey (1976, 1997) and three waves of the International Social Survey Program (1985, 1990, 1996). Altogether, the sample consists of 44 surveys conducted in 20 sample countries. Berlemann (2012) employs various waves of the Eurobarometer Survey to study the factors determining inflation aversion in the three Baltic transition countries.

We organize our overview by discussing five different groups of possible determinants separately: socio-demographic factors, political orientation, education, income-situation and the macroeconomic circumstances.

2.1 Socio-demographic factors

First, various socio-demographic factors might have an influence on individual inflation aversion.

Almost all empirical studies have investigated whether inflation aversion depends on gender. The empirical evidence is yet inconclusive. While Fischer and Huizinga (1982), Easterley and Fischer (2001) as well as Berlemann (2012) found no significant differences between men and women, Scheve (2004) found men to be more inflation

³ Since the studies by van Lelyveld (1999) and Jayadev (2006) are concerned with the determinants of relative inflation, i.e. the quotient of inflation and unemployment aversion, we exclude them from our literature review.

⁴ The surveys were conducted in February 1975, November 1975, December 1977, February 1978 and May 1978.

averse than women. However, while gender is often included in empirical studies of inflation aversion, most studies deliver no theoretical arguments why gender should play a role in determining inflation aversion. As an exception, Berlemann (2012) argues that women might be more likely losing their jobs in times of disinflation.⁵ Women might therefore be more concerned with fighting upcoming inflation as early as possible, which leads to the opposite of the empirical findings reported in Scheve (2004).

A respondent's age might also have an influence on his or her degree of inflation aversion. Retired individuals earning fixed incomes might feel more exposed to inflation than younger individuals earning market incomes which typically adapt quickly to inflation. Again, the existing empirical results are quite inconclusive. Fischer and Huizinga (1982) find a u-shaped effect of age on inflation aversion with medium-aged individuals being most inflation-averse. Easterley and Fischer (2001), Scheve (2004) and Berlemann (2012) find supporting evidence for higher degrees of inflation aversion among the elderly. Some studies also control for the elderly by adding a pensioner-dummy to the regressions. However, they rarely turn out to be significant (see e.g. Easterley and Fischer 2001).

An additional socio-demographic factor which might play a role but yet has been rarely studied is the marital status. One might speculate that married respondents are more concerned with eroding purchasing power since typically more than one person (and often children) have to be financed from one source of revenue. However, Berlemann (2012) found no evidence in favour of this hypothesis.

2.2 Political orientation

Second, political orientation might be connected with individual inflation aversion. The idea behind this argument goes back to partisan theory (see Hibbs 1977). While the median voter approach argues that the programs of opportunistic parties will converge as a result of the competition for electoral votes, under the partisan approach different parties pursue different politics. Hibbs (1977) argues on the basis of a Phillips-curve trade off between high employment on the one hand and stable prices/wages on the other. Whenever this trade-off in fact exists, parties have to choose a feasible combination of inflation and unemployment which coincides with the interests of their parties. Based on the results of various empirical studies and additional empirical evidence from a number of Western democracies Hibbs (1977) concludes that leftist parties tend to choose combinations with low unemployment and high inflation while center and right-wing parties do the opposite.

One thus might expect that people tending to the left political spectrum exhibit lower degrees of inflation aversion than those sympathizing with right parties. In fact, various empirical studies have found supporting evidence for this hypothesis, see e.g. Fischer and Huizinga (1982) and Scheve (2004). However, Berlemann (2012) found the opposite result in the three Baltic states.

⁵ An empirical study by Braunstein and Heintz (2008) for developing countries supports this line of argument.

2.3 Education

Third, education might have an influence on individual inflation aversion. The survey study by Shiller (1997) finds that reported non-economists' assessments of the (negative) effects of inflation differ substantially from economic theory. The reasons why these people are inflation averse are thus often based on a quite deficient information set and they therefore tend to exaggerate the negative effects of inflation. Whenever higher degrees of education go along with economic knowledge, well-educated people should exhibit lower degrees of inflation aversion than less educated.

However, the existing empirical evidence towards the effects of education on inflation aversion is highly inconclusive. While Easterley and Fischer (2001) and Berlemann (2012) find education to decrease inflation aversion, Scheve (2004) reports insignificant results. Fischer and Huizinga (1981) find education to increase inflation aversion, although the effect is small.

2.4 Income and wealth

Fourth, income and wealth might contribute to explaining inflation aversion. Since inflation can be interpreted as a tax on nominal assets one should expect people with higher incomes to be more inflation averse. The same holds true for wealthy people holding significant parts of their funds in nominal assets. Real estate owners have little reason to be overly inflation averse.

The empirical evidence on income as a determinant of individual inflation aversion is yet inconclusive. In line with the above hypothesis, Scheve (2004) finds individual inflation aversion to rise in income. The opposite finding is reported by Easterley and Fischer (2001). Fischer and Huizinga (1981) find no significant effect.

Evidence on the effect of wealth is yet quite scarce. Fischer and Huizinga (1981) report that house-owners turn out to be more inflation-averse. However, this result might also be the consequence of reverse causation.

An additional way of controlling for the effect of income is to use dummies for different occupational groups. Scheve (2004) finds unemployed persons to be less inflation averse than employed individuals while Easterley and Fischer (2001) could not detect a difference between the control group of students and unemployed persons. The only occupational group they find to differ from students are blue collar workers, which turn out to be significantly more inflation averse. Similarly, no systematic effects could be detected in the study by Berlemann (2012).

2.5 Macroeconomic situation

Finally, one might expect that the macroeconomic situation has an influence on revealed inflation aversion. Hayo (1998) found a strong correlation between the percentage of people stating fighting inflation to be the most important issue facing the country in a panel of nine EU member states.⁶ Thus, it is reasonable to assume that in times of

⁶ According to Hayo's (1998) findings the aggregate level of a country's inflation aversion depends on its long-term inflation history. However, since our focus is on three East European countries which experienced

high inflation, more individuals will claim to be inflation averse than in times of low inflation. Moreover, one might expect that inflation will be perceived as a less important problem in times of high unemployment. Scheve (2004) and Berleemann (2012) found supporting evidence for both hypotheses.

3. Data and descriptive statistics

We base our estimations (primarily) on Eurobarometer data. The Eurobarometer 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 countries.⁷ The primary aim of the survey is to deliver information on the attitudes of European citizens towards Europe, its institutions and policies. Although the survey was subject to certain revisions in the course of time, a number of standard questions has been asked quite regularly.

Since 2003, the Standard Eurobarometer also includes a question on the respondents' individual evaluation of the most important challenges of their countries of residence. The wording of the referring question is "What do you think are the most important issues facing (our country) in the moment?" The respondents could choose maximally two answers from a catalogue including the topics: Crime; Public Transport (only until 2006 I); Economic Situation; Rising prices/inflation; Taxation; Unemployment; Terrorism; Defence/foreign affairs; Housing; Immigration; Health care system; The educational system; Pensions; Protecting the environment (2009 II: The environment); Energy related issues (energy prices, energy shortages, etc.) – (since 2006 II); Others.

The Czech Republic became part of the European Union in May 2004. Since the autumn wave of 2004 data from the Czech Republic is available. Our dataset includes Eurobarometer data from the autumn wave 2004 until the autumn wave 2009. With the exception of the autumn 2006 wave a number of approximately a thousand respondents per country are included into each survey. As Table 1 reports, slightly more than ten thousand observations are included in our empirical analysis.

In order to construct a proxy for individual inflation aversion we construct a binary dummy variable from the answers to the most-important-issues question. The variable "Inflation MII" was set to one whenever "Rising prices/inflation" was among a respondent's answers to the question. Otherwise, the dummy was set to zero. While the respondents were allowed to give two answers to the question we cannot rule out that people not mentioning inflation among the two most important problems are nevertheless concerned with inflation. It might well happen that inflation drops out of the personal list of the two most important issues because a different topic turns out to be more important at the time of the survey. Although the data thus are no perfect measure for individual inflation aversion they can nevertheless be assumed as a good proxy for the true degree of inflation aversion.

Table 1 gives an overview on revealed inflation aversion in the Czech Republic

the transition towards a market economy only recently we do not consider this aspect in the following.

⁷ The survey has often been extended to EU accession countries well before they formally got part of the EU.

Table 1. Sample surveys, respondents and inflation aversion

Year	Survey	Respondents (abs.)	Among most important issues		
			Inflation (abs.)	Inflation (%)	Unemployment (%)
2004	II	1081	163	15.08	54.86
2005	I	1092	99	9.07	47.34
2005	II	1164	141	12.11	40.21
2006	I	514	64	12.45	41.63
2006	II	1102	179	16.24	33.85
2007	I	1054	257	24.38	20.78
2007	II	1118	462	41.32	12.97
2008	I	1017	384	37.76	15.24
2008	II	1030	449	43.59	16.31
2009	I	1099	258	23.48	49.5
2009	II	1060	228	21.51	49.72

Source: Eurobarometer

throughout the sample period. Obviously, the degree of inflation aversion varies considerably in the course of time and ranged in between 9% and 44%. Most of the considered determinants of individual inflation aversion were also extracted from the Eurobarometer survey. We control for all five groups of possible determinants of individual inflation aversion discussed in the literature survey: socio-demographic factors, political orientation, education, income-situation and the current stance of the economy.

We control for three socio-demographic factors. Following earlier studies we control for the respondents' gender ("Male"). Besides, we add a dummy variable for married respondents ("Married") and control for the respondents' ages ("Age"). We also add a dummy for retired persons ("Retired").

In order to study whether political orientation matters we employ the self-reported placement on a ten-point left-right scale ("Political Orientation"). Low values on the scale indicate a left orientation. We also add a dummy variable ("Unemployment MII") indicating whether the respondent answered unemployment to range among the two most important issues facing the country.

While no detailed information on the respondents' levels of education is available, the Eurobarometer contains information on the age of the respondents when finishing their education. Higher degrees of education typically afford more time. It therefore seems to be reasonable to assume that individuals completing their education in the age of 21 or older tend to have a high level of education. To control for education we therefore add a corresponding dummy variable ("High Education") to the list of considered determinants of inflation aversion. We also add a dummy variable for students to the regression ("Student").

While the Eurobarometer Survey also contains direct questions on the income si-

tuation and individual wealth of the respondent, no data is available for the Czech Republic. We therefore control for income in an indirect way by forming certain subgroups of the population. We include a dummy variable for unemployed individuals ("Unemployed") which earn either no or only a transfer income. We also control for a number of jobs with different salaries. We include dummies for professionals ("Professional"), employed professionals ("Employed Professional"), positions in general management ("General Management") and middle management ("Middle Management"), business proprietors ("Business Proprietors"), shop-owners and craftsmen ("Shopowner Craftsman"), farmers ("Farmer"), supervisors ("Supervisor") and employed individuals mainly working at a desk ("Employed Desk"), travelling ("Employed Travelling") or working in service ("Employed Service"). We also add a dummy for unskilled manual workers ("Unskilled Worker") and thus a job typically on the lower edge of the salary scale. No dummy was constructed for individuals responsible for shopping and housekeeping as the reference group.⁸

Finally, because the data come from different points in time it is necessary to control for the stance of the economy at the time when the referring survey was conducted. We include both the average level of inflation and unemployment on a bi-annual basis (wave I: January to June, wave II: July to December) into the regression. The inflation rate was calculated on the basis of EUROSTAT data. Tables 2 gives an overview on the variables and delivers some descriptive statistics.

The summary statistics reveal that on average, the Czech citizens judged unemployment (35%) to be the more severe problem than inflation (24%). This finding is quite interesting in the light of the results of Jayadev (2006) reports from the International Social Survey Program (ISSP). In the 1996 ISSP survey individuals from 20 countries were asked whether they prefer fighting inflation or lowering unemployment. With almost 65% the respondents from the Czech Republic revealed by far the highest degree of (relative) inflation aversion. However, as Figure 1 shows, inflation was extraordinarily high at that time.

Average political orientation has a slight bias towards conservatism in the Czech Republic. 42% of all respondents are male and roughly 74% are married. The percentage of unemployed persons among all respondents turns out to be 6%. While 8% of all respondents are classified as high qualified, another 6% are students which will likely reach this status in the course of their lives. The average age of the respondents is 47 years; 28% of the respondents are retired.

On average, both inflation and unemployment were on comparatively moderate levels in the Czech Republic over the sample period. Average inflation amounted to 2.83%, average unemployment to 6.53%. As shown in Figure 2, inflation was around 2% most of the time but had a peak of about 6% in 2008. One-year-ahead expected inflation, measured by the expectations survey conducted by the Czech National Bank, tends to lead inflation. In low-inflation periods inflation short-term inflation expectations typically exceeded actual inflation while expectations were well below inflation in the short inflationary period of 2008. Medium-term (3-year-ahead) inflation expectations were considerably less volatile and fluctuated only slightly around 2.6%. The

⁸ We excluded the group of fishermen because only one observation was available for this profession.

Table 2. Descriptive statistics

Variable	Obs.	Range	Min.	Max.	Mean	Std. Dev.
Inflation_MII	11,331	1	0	1	0.24	0.43
Male	11,894	1	0	1	0.42	0.49
Age	10,789	79	15	94	46.86	16.65
Retired	10,827	1	0	1	0.28	0.45
Married	11,869	1	0	1	0.74	0.44
Political_Orientation	10,347	9	1	10	5.68	2.51
Unemployment_MII	11,331	1	0	1	0.35	0.48
High_Education	6,813	1	0	1	0.08	0.27
Student	10,827	1	0	1	0.06	0.24
Professional	10,827	1	0	1	0.01	0.11
Employed_Professional	10,827	1	0	1	0.02	0.12
General_Management	10,827	1	0	1	0.00	0.07
Middle_Management	10,827	1	0	1	0.06	0.23
Business_Proprietor	10,827	1	0	1	0.03	0.17
Shopowner_Craftsman	10,827	1	0	1	0.04	0.20
Employed_Desk	10,827	1	0	1	0.21	0.41
Employed_Travelling	10,827	1	0	1	0.03	0.18
Employed_Service	10,827	1	0	1	0.04	0.20
Supervisor	10,827	1	0	1	0.00	0.05
Worker_Skilled	10,827	1	0	1	0.09	0.29
Worker_Unskilled	10,827	1	0	1	0.01	0.12
Unemployed	10,827	1	0	1	0.06	0.23
Inflation_Level	11,897	4.8	1.5	6.3	2.83	1.46
Expected Inflation (1-year ahead)	11,897	2.1	1.9	4	2.81	0.55
Expected Inflation (3-year ahead)	11,897	0.4	2.4	2.8	2.59	0.11
Unemployment_Level	11,897	3.9	4.4	8.3	6.53	1.38

Note: 4,573 observations included.

Source: Eurobarometer, Eurostat, Czech National Bank

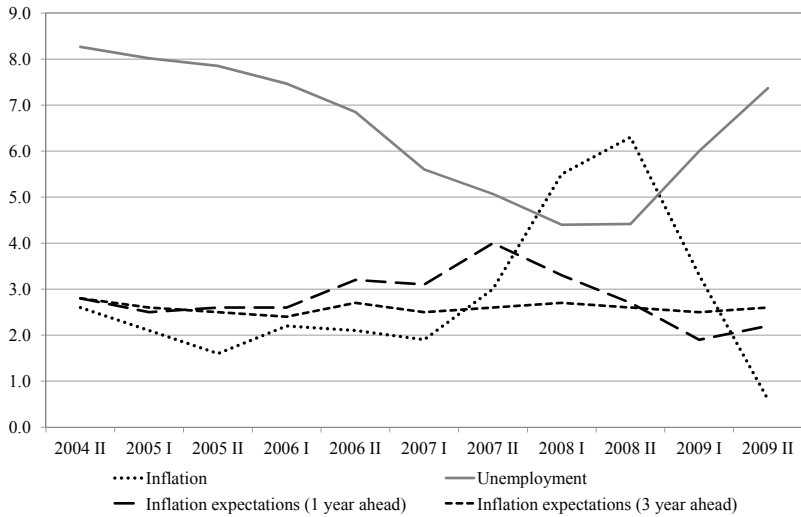
unemployment rate was slightly above 8% in the second half of 2004 and fell steadily to some 4.5% in the end of 2008. Throughout the rest of the sample period, unemployment was again rising to almost 7.5%.

4. Estimation results

Since our explanatory variable is a dummy, we study the determinants of individual inflation aversion in a logit estimation approach. The binary logit model is defined as

$$\pi = \text{prob}(Y = 1 | X = x) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 \cdot x)}}$$

with π being the probability of the dummy variable Y to take value of 1 given the vector of covariates X . The parameters β_0 and β_1 can be estimated using the maxi-



Source: Eurostat, Czech National Bank

Figure 2. Inflation and unemployment in the Czech Republic, 2004 II – 2009 II

mum likelihood technique. Following Chamberlain (1980) and Ferrer-i Carbonell and Frijters (2004), we include a clustered error term since the included levels of inflation (expectations) and unemployment are the same for all respondents from the same wave.

We estimated the logit model with all available indicator variables presented in Section 3. However, due to multicollinearity problems we could not use inflation and measures of inflation expectations at the same time. In the first step, we therefore included only current inflation into the estimation equation. While the coefficient of inflation turned out to be slightly positive, it was highly insignificant. One might argue that the respondents are less concerned with current inflation and that it is thus more useful to include measures of inflation expectations into the regression. Of course it would be optimal, to employ a measure of individual inflation expectations of the respondents to the regression, however, no such data was available. We therefore employed aggregate inflation expectations from the survey conducted and published by Czech National Bank for our analysis. When including 1-year-ahead inflation expectations, the results still remain highly insignificant. However, 3-year-ahead inflation expectations turn out to be significantly positively related to revealed inflation aversion. Since this model variant also delivered the highest Nagelkerke Pseudo R^2 and the lowest AIC statistic we concentrate on reporting the results of this model in the following. The qualitative results for the rest of the control variables remain unchanged by this decision.⁹

The estimation results are shown in Table 3. As a measure of the overall fit we use Nagelkerke's Pseudo R^2 . The estimated model explains 12.3% of the observed varia-

⁹ The estimation results for the other two models variants are available from the author on request.

tion in individual inflation aversion. The likelihood-ratio-test indicates that the model is highly superior to a model explaining inflation aversion by a constant probability.

Ten of the employed control variables turn out to have coefficients which are significantly different from zero. The signs of the significant coefficients deliver easily information on the direction of the effect of the control variables. With one exception, 3-year-ahead inflation expectations, an increase in the control variables leads to a lower probability of a respondent revealing a preference for fighting inflation as one of the most important problems facing the country.

Table 3. Estimation results

	Coeff.	Std. Dev.	Z-Score	$P(Z > Z)$
(Intercept)	-1.84	2.132	-0.863	0.388
Male	-0.148*	0.083	-1.792	0.073
Age	0.001	0.004	0.291	0.771
Married	-0.131	0.085	-1.529	0.126
Political_Orientation	-0.043***	0.016	-2.732	0.006
Unemployment_MII	-1.013***	0.089	-11.405	0
Student	-1.284***	0.386	-3.327	0.001
Unemployed	-0.157	0.243	-0.644	0.519
Retired	-0.414*	0.222	-1.866	0.062
Professional	-0.209	0.506	-0.414	0.679
Shopowner_Craftsman	-0.765***	0.283	-2.704	0.007
Business_Proprietor	-0.187	0.300	-0.624	0.533
Employed_Professional	-0.621	0.499	-1.244	0.213
General_Management	0.460	0.660	0.696	0.486
Middle_Management	-1.055***	0.328	-3.219	0.001
Employed_Desk	-0.177	0.199	-0.891	0.373
Employed_Traveling	-0.284	0.277	-1.024	0.306
Employed_Service	-0.181	0.252	-0.717	0.473
Supervisor	-0.605	1.126	-0.538	0.591
Worker_Skilled	-0.073	0.214	-0.340	0.734
Worker_Unskilled	-0.191	0.330	-0.578	0.563
High_Education	-0.318**	0.150	-2.122	0.034
Unemployment_Level	-0.323***	0.071	-4.531	0
InfExpect_3	1.395*	0.806	1.731	0.084
AIC	4341.499			
Nagelkerke's R-Square	0.123			
LR-test	373.591			0

Note: ***, **, * denote significance on the 99%, 95% and 90% confidence level, respectively.

In order to learn more about the magnitude of the effects, marginal effects have to be calculated. However, different from a linear regression, the marginal effects of the covariates are depending on the level of the variable itself. Thus, marginal effects can only be evaluated at pre-defined values (baseline specification) of the covariates.

It is quite common to evaluate marginal effects at the sample means of the covariates. However, this is only a suitable procedure for (almost) continuous variables. Since many of our covariates are themselves dummy variables, we apply a slightly different procedure. In order to do so we apply the sample means only to the variables “Age”, “Political Orientation”, “Unemployment Level” and “InfExpect_3”. All other variables in the estimation are dummy variables and are set to zero in the baseline specification. According to our estimation results, a respondent with the baseline specification would mention inflation among the most important problems facing the Czech Economy with a probability of 37.1%. Moreover, the marginal effects are typically evaluated for a change of one standard deviation of the referring covariate. We follow this procedure for the continuous variables. For the dummy variables we show the effects of a complete switch to the opposite state (i.e. the dummy variable taking the value of 1 instead of 0). In Table 4 we show the marginal effects for a change in the (significant) covariates, evaluated at the baseline specification.

Table 4. Marginal effects (only significant covariates)

	Coeff.	Baseline spec.	Change	Marginal eff.
Male	−0.148*	0	1	−0.035
Political_Orientation	−0.043***	5.681	2.5	−0.025
Unemployment_MII	−1.013***	0	1	−0.236
Student	−1.284***	0	1	−0.3
Retired	−0.414*	0	1	−0.097
Shopowner_Craftsman	−0.765***	0	1	−0.179
Middle_Management	−1.055***	0	1	−0.246
High_Education	−0.318**	0	1	−0.074
Unemployment_Level	−0.323***	6.527	1.4	−0.104
InfExpect_3	1.395*	2.59	0.1	0.035

Note: ***, **, * denote significance on the 99%, 95% and 90% confidence level, respectively.

4.1 Socio-demographic variables

As the first result, we find men to be less inflation averse than women. Men exhibit a 3.5% lower probability to mention inflation among the most important problems facing the Czech economy. As we argued earlier, this result coincides with the idea that women are interested in keeping inflation low because disinflationary policies, which are typically pursued in times of high inflation, tend to increase unemployment. However, this finding might also be due to the fact that women perceive inflation systematically different than men and also tend to have significantly differing inflation expectations.¹⁰ Interestingly enough, both men and women seem to perceive inflation

¹⁰ See e.g. the empirical evidence for the U.S. reported in Bryan and Venkatu (2001a,2001b). However, similar findings have been reported by other studies such as Jonung (1981) and Jonung and Laidler (1988).

to be higher than the official CPI inflation. However, on average women report much higher perceived inflation than men. Similarly, women reveal systematically higher inflation expectations. While the reasons explaining these patterns are still quite unclear (see Bryan and Venkatu 2001b) they might explain why women tend to reveal higher degrees of inflation aversion in our sample. Whenever the Czech female respondents perceive higher inflation rates than men it is quite likely that they are also more concerned with inflation than men. The same holds true when in fact the female respondents have higher inflation expectations. However, the available data does not allow us to test this hypothesis empirically.

The age variable turns out to have no significant effect on inflation aversion. However, retired persons show a significantly lower degree of inflation aversion. Thus, we nevertheless find empirical evidence pointing into the direction that elderly people are less concerned with inflation than younger ones.

Bryan and Venkatu (2001a) report married persons to perceive inflation below average and also to exhibit below-average inflation expectations. This is in line with the negative coefficient we find for married respondents. However, this effect is marginally insignificant.

4.2 Political orientation

As reported earlier, most previous empirical studies found politically conservative respondents to be more inflation averse. However, in our study of the citizens of the Czech Republic we find the opposite result: respondents claiming to be highly conservative turn out to be significantly less inflation averse than respondents tending to the left political spectrum.¹¹ Increasing the political orientation variable by one standard deviation towards a higher degree of conservatism (on a 0–10 scale) decreases the probability to reveal inflation aversion by 2.5 percentage points. It is an interesting question what are the possible reasons for this puzzling finding.

As Lewis (2000) and Sikk and Bochsler (2008) argue, the ideological stances of parties in Eastern Europe are not as well-defined as in Western Europe. The exact meaning of the term “political conservatism” is quite obscure for the citizens of the Czech Republic. In the course of time, quite different political positions were associated with conservatism. In ancient times, conservatism was used as a synonym for reactionary 19th century Austrian rulers (Hanley 2009). Since the Czech society lacked a native aristocracy, strong nationalism was absent and religion played only a minor role (compared, for example, to the northern neighbour Poland) the typical basis of conservatism did not exist (Holubec and Rae 2010). As a consequence, no strong conservative political movement evolved. The few conservative political forces diminished after World War II due to the ban of various parties as a consequence of collaboration with the Nazi regime. Throughout communist times, the opponents of the reforms initiated by Dubcek and Gorbachev were referred to as “conservatives” (Hanley 2009). After the collapse of the communist regime, the political left was labelled “conservative” while the right ideologies were judged as modern and progressive (Ho-

¹¹ In his study of the three Baltic transition countries Berlemann (2012) found a similar result.

lubec and Rae 2010). For many Czech citizens, conservatism was used as a synonym for pro-communist at that time. The evolving Civil Democratic Party promoted an economically highly liberal programme. At the same time, Václav Klaus claimed his party to be conservative. All these developments likely contributed to a quite obscure meaning of the term “conservatism”. One might thus suspect that the Czech respondents to the Eurobarometer Survey do not have weighting factors on the goals of stable prices and high employment in mind when self-reporting on their personal political orientation. It is thus not too surprising that conservatism has a quite different meaning in the Czech Republic and we thus find a reverse relation between political orientation and inflation aversion.

Interestingly enough, we find a highly significant negative effect of unemployment aversion on inflation aversion. Respondents ranking unemployment among the two most important issues facing the country show are less likely stating inflation to be among the most important issues at the same time. Compared to the baseline specification, revealed unemployment aversion decreases the likelihood to exhibit inflation aversion by 23.6%. This finding is in line with previous empirical findings.

4.3 Education

In line with the earlier discussed hypothesis the highly educated respondents in the Czech Republic turn out to be significantly less inflation averse than the less educated. The probability of highly educated individuals to reveal inflation aversion is 7.4% lower than in the baseline-specification. Moreover, even students (marginal effect: -30.0%) exhibit significantly lower degrees of inflation aversion than non-students. We thus find relatively strong empirical evidence in favor of the hypothesis that higher levels of education decrease inflation aversion

4.4 Income

Our estimation results deliver little empirical evidence in favour of the hypothesis that income plays a systematic role in determining inflation aversion. We find almost no systematic differences between people having job with typically differing incomes. Our peer group consists of people which are concerned housekeeping & shopping, farmers and fishermen. Only two occupations from the medium income group, middle management (-24.6%) and shop-owners and craftsmen (-24.6%) turn out to be significantly different from the peer-group. However, neither do members of typical high income occupations like professionals, top managers or business owners differ significantly from the peer-group nor do those of occupations with typically low incomes such as unskilled workers. And even the unemployed show no significantly different pattern.

Altogether, we might conclude that we do find little evidence in favor of income as an important determinant of inflation aversion in the Czech Republic. However, since we have no direct measure of income and none of wealth, this evidence should be interpreted with caution.

4.5 Macroeconomic situation

Since most earlier studies worked with pure cross section data, there has yet been little research on the question how inflation aversion is connected with the macroeconomic development. Our findings indicate that the macroeconomic environment plays a significant role in determining inflation aversion.

As discussed earlier, current inflation is without direct effect on inflation aversion. However, medium-term (3-year-ahead) inflation expectations turn out to be significantly related to revealed inflation aversion. A rise of inflation expectations by one standard deviation increases the probability of a respondent to mention inflation among the most important problems by 3.5%.

At the same time, inflation aversion turns out to be negatively correlated with the level of unemployment. High unemployment rates seem to go along with low degrees of inflation aversion. It thus seems that the public shifts its primary interest towards increasing employment in times of high unemployment. An increase of unemployment of one standard deviation leads is associated with a decrease of inflation aversion of 10.4%.

5. Conclusions

In our empirical study of the determinants of individual inflation aversion among the Czech citizens we have identified a number of significant factors such as gender, retirement status, political orientation, education and the macroeconomic environment.

One might assume that the role most of these factors play in determining inflation aversion are quite stable since they typically result from culture, historical experiences and social values. If at all, these underlying factors typically change only very slowly in the course of time. Thus, the observable variations in the number of citizens over the years primarily must be the result of changes in the values of the covariates themselves. However, even many of the covariates are quite stable in the course of time. The share of male respondents as well as the one of retired persons, students, highly educated individuals, shop-owners and employees in middle management remained almost constant over the years in the Eurobarometer survey and so it likely does in the whole population. Thus, the remaining factors have to account for the observable variability of inflation aversion over the sample period. While political orientation is surely subject to some variation at least in the medium term and thus might play a role herein, the most obvious factor explaining the fluctuation of aggregate inflation aversion is the development of the macroeconomy.

In democratic states, politicians in general have to take the preferences of the voters into account. From macroeconomic theory it is well-known that the government's weighting parameters of macroeconomic goals such as fighting inflation and unemployment play a decisive role in determining the macroeconomic outcome.¹² Whenever the voters' and thus the government's preferences are subject to changes in the

¹² As an example one might refer to the game-theoretic models of monetary policy in the tradition of Barro and Gordon (1983).

course of time, this likely leads to welfare-decreasing policy cycles.¹³ Against the background of our empirical findings, the decision of the Czech Republic to install an independent central bank which is primarily concerned with price stability seems to be an adequate institutional strategy to prevent these cycles from occurring.

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¹³ For a theoretical underpinning of this line of argument, see Berleemann and Schneider (2011).

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