



Psychological costs of currency transition: evidence from the euro adoption



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ABSTRACT

This paper assesses the perceived individual psychological costs of adhering to the Euro. We use the difference-in-differences approach (DD), comparing individual levels of satisfaction with the economy in Slovakia immediately before and after the introduction of the Euro, with similar individuals in neighboring Czech Republic, which did not adopt the Euro. Both countries were economically and politically integrated for decades, and display similar macroeconomic behavior before and after the currency change in Slovakia. What we assess is not the actual, economic, costs stemming from the Euro adoption, but the change in utility as perceived by the individuals. There is evidence of substantial psychological costs associated with currency transition, especially for the old, the unemployed, the poorly educated and households with children. Our results are robust to the use of alternative control groups and to estimation procedures using the DD matching approach. The significant perceived costs uncovered in this paper suggest policy-makers should not ignore them when considering a sweeping economic change such as the adoption of a new currency.

1. Introduction

In the wake of United Kingdom's referendum on whether to remain in the European Union it has become evident how individual perceptions matter, whether or not based in actual facts and information. Policy decisions may be reserved to informed elites, or anchored in the legitimacy of the popular vote,¹ but the latter requires a deeper understanding of how individual perceptions in different demographic groups confound and even counter objective information. This paper is a contribution in that direction, by assessing the perceived individual psychological costs of moving to a new currency, the Euro, across different population groups.

European countries considering a transition to the Euro have more often than not met with considerable popular opposition. In some cases referenda were called on the issue, and the go-ahead for adhering to the Eurozone has often failed to pass the popular test. We believe opposition to a change in currency is not necessarily rational, nor easily explainable, but it exists. Currency is to the

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¹ For example, as far as adoption of the Euro is concerned, the two positions have been clearly stated. In the Baltic states, and facing popular resistance, politicians have relied on "geopolitical objectives", further suggesting that "(...) this issue should be decided not among the population but among the real decision makers". Poland, on the other hand, has held firmly to its own currency, with officials stating they "cannot imagine any government would want, or indeed could, steer Poland into the Eurozone without Poles accepting the move". See [The Economist \(2012\)](#), [The Baltic Times \(2013\)](#), [Fontanella-Khan and Milne \(2013\)](#), and [Gelzis \(2013\)](#).

economy what language is to social life. Ubiquitous, both attribute value as well as assign meaning to exchanges. Changing one's language or currency entails considerable psychological elements that may affect well-being, beyond its practical implications and adjustments imposed to everyday life. However difficult, gauging the extent and distribution of the costs of currency change is a relevant and timely policy issue in the European context.

The nature of the psychological costs of currency changeover deserves a clarifying conceptual discussion. First, it is important to understand what psychological costs are not: they are not the actual material costs to the Slovak economy stemming from the Euro adoption. Instead, psychological costs are assessed in terms of utility changes as perceived by individuals, not assessed in real Euros or the growth rate of output.² Second, these costs may be associated not to an actual change in the level of satisfaction, but an expected change, dependent on individual risk aversion and individual assessment of the likelihood of uncertain events. Third, psychological cost are not entirely “rational”, in the sense that they may depend not even on inferred probabilities and outcomes, but under or overvalue certain features of the currency transition.³ In sum, we deal with psychological costs because they are perceived and not actual, affected by risk aversion, possibly affected by behavioral-type biases.

One may ask why would currency transition be prone to perception bias? In the first place, individuals tend to think of currency in nominal rather than real terms, since what they deal with in a daily basis are nominal rather than real prices and wages (Shafir et al., 1997). As a new currency is introduced, prices in that currency are perceived to be different from prices in an old currency, possibly entailing psychological costs. This effect is known as a “money illusion”.⁴ Another specific source of psychological costs in currency transition is rescaling, that is, the difficulty of converting prices from the new to the old currency (Marques and Dehaene, 2004; Marques, 2007). Using a familiar or old currency as a benchmark for assessing prices in a foreign or new currency is known as anchoring bias (Tversky and Kahneman, 1974).⁵ There is also the cost of relearning, associated with the persistence in the consumer's memory of prices as denominated in the old currency. This complex process may be more costly than rescaling, as mapping items to prices involves the long-term memory (Marques and Dehaene, 2004; Marques, 2007). Finally, there are other important subjective costs as, with time, individuals build an emotional attachment to a currency.⁶

The literature on the impact of the Euro adoption on personal well-being is still very limited, especially in the case of new member states of the Eurozone. Wunder et al. (2008) identify a negative impact of the Euro adoption in Germany on personal satisfaction with own financial situation, while Chadi (2015) finds solid evidence of a relationship between concerns with the Euro and lower life satisfaction in Germany. Otrachshenko and Popova (2012) show that adhesion to the Euro increased life satisfaction in Cyprus, Malta, and Slovakia, but decreased it in Slovenia and Estonia.⁷

This study contributes to the literature in several distinct ways. First, it assesses the psychological cost of currency transition in terms of the individual level of satisfaction with the economy, a material domain of subjective well-being. As pointed out above, our focus is not the objective benefits of the Euro adoption, but the subjective perception of net benefits. Second, our investigation relies on a “quasi-natural experiment” involving the Czech Republic and Slovakia, where the two countries chose opposite paths vis-à-vis the Euro, following decades of deep political, economic, social and cultural integration. Third, while existing studies assume similar costs across all socioeconomic groups (Dowd and Greenaway, 1993; Wunder et al., 2008), we argue for and provide evidence of significant differences in perceptions across groups. Individual characteristics such as income, labor market access, gender, age, and educational level, seem to matter for perceptions. Finally, this study contributes to the literature by filling the gap concerning the impact of the Euro adoption on the well-being of individuals in a new member state. This is crucially important as several new member states are likely to soon confront the choice of adopting – or not – the common currency.

Our empirical findings suggest that the introduction of the Euro in Slovakia had important negative impacts on individual satisfaction with the economy. Furthermore, we present evidence that certain groups of the population do seem to be more vulnerable to the psychological costs of changing the currency. The most affected groups are the old, the unemployed, the poorly educated, and families with children. Such differences across groups as to the perceived costs of adopting a new currency should guide effective information campaigns when the issue comes to the fore. Our results suggest that, if not properly communicated, the adoption of a new currency will meet resistance – objectively justified or not – driven mostly by a few specific population groups.

Our paper is organized as follows. The next section presents the methodology. Section 3 discusses estimation results, while Section 4 presents robustness check. The final section concludes.

² The Central Bank of Slovakia published forecasts of the costs and benefits of adopting the Euro and suggested significant income and growth gains in the medium term, explicitly stating that “Euro adoption will have not only anonymous macroeconomic impacts, but it will be manifested in the life of all citizens.”, and “The euro should be a benefit for majority of the citizens.” (see Šuster, 2006). Fidrmuc and Wörgötter (2013) show that like other economies in the area, the Slovak economy saw its GDP fall hard in 2009, with the financial crisis, but, unlike the other economies, GDP in Slovakia rebounded rapidly, though the recovery did not translate into lower unemployment rates.

³ This may occur in the exact same way that, as several studies documented, air travelers seem to overestimate the probability of an accident (Carlsson et al., 2004) and citizens overvalue the personal threat of terrorism because a few, very costly, outcomes gain preeminence and confound “rational” judgment. Exposure to terrorism, it seems, entails a decrease in utility that goes beyond the computable expectation of losses. Authors such as Becker and Rubinstein (2011) and Sunstein (2003) suggest the perceived cost of terrorism greatly exceeds the “objective” discounted harm.

⁴ See Amado et al. (2007), Hobijn et al. (2006), and Lotz and Rocheteau (2002). Gamble (2006) shows evidence confirming that the “Euro illusion” effect is more prevalent for lower-priced items, possibly more present in the consumption basket of lower income households.

⁵ Mussweiler and Strack (2004) find that people compare prices of products in a single currency much more accurately than in different currencies, even if all the information, including exchange rates, is available. Further, Mussweiler and English (2003) find evidence that the less familiar individuals are with the new currency, the more likely they are to be less accurate in predicting prices in the new currency.

⁶ This suggests a type of endogenous change in utility, which can be assessed empirically, as in Tyska and Przybyszewski (2006).

⁷ In a qualitative study exploring consumer attitudes towards the Euro just before its introduction in Estonia, Kerem et al. (2013) conclude for the presence of doubts and prejudices concerning the Euro.

2. Methodology

2.1. Data and econometric model

To estimate the impact of the Euro adoption on individual satisfaction with the economy, we use the difference-in-differences (DD) approach. It is meant to evaluate the average treatment effect of specific policies - also known as treatments - on different outcomes of interest. We first check a wide set social and economic indicators for Slovakia and the Czech Republic, and find that the two countries share similar paths immediately before and after the adoption of the Euro by Slovakia (see [Table A1](#) in the [Appendix A](#)). Slovakia and the Czech Republic thus share observable social, demographic, and economic characteristics, including population density, life expectancy, median age of the population, female to male ratio, age dependency ratio, and inequality as gauged by the Gini coefficient. Macroeconomic characteristics such as inflation, GDP growth, and inward foreign direct investments show similar magnitudes. Furthermore, all indicators are relatively stable in both countries for the years under study. The overall stability of macroeconomic aggregates in both countries suggests that the latter cannot justify significant changes in the level of individual satisfaction with the economy.

The roadmap of the introduction of the Euro in Slovakia is as follows: on November 28, 2005, Slovakia entered the Exchange Rate Mechanism II (ERMII). It received approval to join the Eurozone by July 8, 2008. The Euro was introduced from January 1, 2009, with the dual price display in Slovak koruna and Euros mandatory from August 8, 2008 to December 31, 2009 and, on a voluntary basis, until June 30, 2010.⁸ It is worth underlining that the media coverage and political discussions in the period leading to the Parliamentary elections in June 2010 is unlikely to have reinforced negative perceptions as to the state of economy. In fact, the Social democrats, the incumbent, pro-euro, ruling party won the elections and enlarged its share of votes from 29.1% in 2006 to 34.8%.

As suggested by [Kahneman et al. \(1997\)](#) and [Dolan and Kahneman \(2008\)](#), individual life satisfaction can be considered as a proxy for experienced utility. In this paper we use as dependent variable an individual's satisfaction with the country's economic situation. In line with [Cummins \(1996\)](#), this is a domain of life satisfaction related to material well-being that is an important part of overall experienced utility.⁹ To assess how satisfaction is affected by adhesion to the Euro, we compare individual satisfaction of Slovaks before and after the currency's introduction, using individuals from the Czech Republic with similar characteristics as a control group.¹⁰ Given the profound historical, social, and economic relationship between the Czechs and the Slovaks, the use of the former as a control group helps us to remove the effect of a variety of unobservables that would otherwise contaminate the results. Thus, we can confidently posit that both countries were hit by the 2008 crisis in an equivalent way, and considerable differences in levels of satisfaction between similar groups may be ascribed to the adoption of the Euro in Slovakia.

Our data are collected from the European Social Survey (ESS) for the years 2008 and 2010, the years immediately before and after Slovakia's adhesion to the Euro, and include a total of around 7000 observations. The survey is a repeated cross-section of individuals from Slovakia and the Czech Republic. The description of the variables and the summary statistics are in [Tables A1 and A2](#) in the [Appendix A](#). We conduct a DD estimation procedure, with the following specification:

$$Satisfaction_{ijt} = \beta_0 + \beta_1 y2010_t + \beta_2 Slovak_i + \alpha_{DD} (Slovak_i * y2010_t) + x'_{ijt} \gamma + Region'_j \delta + \varepsilon_{ijt} \quad (1)$$

where subscripts i , j , and t stand for individual, region, and time, respectively. *Satisfaction* stands for satisfaction with the economy for each individual-year. *Slovak* is a dummy variable that equals 1 if the observation concerns a Slovak citizen, and 0 if it refers to a Czech citizen. *y2010* is a dummy variable that equals 1 for 2010. Thus, *Slovak***y2010* captures the average impact on the individual satisfaction of a Slovak in the year after the Euro was introduced. The set of independent variables x in Eq. (1) controls for individual characteristics including self-assessed income, age, gender, education level, household size, urban, marital and employment statuses, and the sector of employment, including industry, finance, or other sectors.¹¹ *Region* stands for a set of dummy variables, representing regional fixed effects in the Czech Republic and Slovakia. One region from each country is used as default group. ε is a stochastic disturbance term. β_0 stands for the intercept, while β_1 considers the common year effect in both the treatment and control groups. β_2 represents the time-constant difference between the default regions of the Czech Republic and Slovakia. α_{DD} stands for the average treatment effect, the change in individual satisfaction with economic situation in the treatment group due to the Euro's introduction. γ is a vector of parameters of explanatory variables, x . δ is a vector of parameters capturing regional differences on satisfaction with economic situation.

Individual satisfaction with the economy, *Satisfaction*, is measured on a Likert scale ranging from 0 (extremely dissatisfied) to 10 (extremely satisfied). In this case the ordered logit or probit would be an appropriate model. However, according to [Ai and Norton \(2003\)](#), the magnitude and standard errors of marginal effects of interaction terms in those models are not straightforward to compute. [Ferrer-i-Carbonell and Frijters \(2004\)](#) and [Wooldridge \(2002\)](#) provide evidence that the results from the ordered logit approach are comparable to ordinary least squares (OLS). Thus, we conduct the estimation of Eq. (1) above by OLS, which allows us

⁸ See [European Commission \(2014\)](#).

⁹ [Cummins \(1996\)](#) reminds that life satisfaction consists of distinct domains, including material well-being, health, productivity - i.e. employment, vocation, education, etc., intimacy - i.e. spouse, friends, children, etc., place in community - i.e. social life, social relations, doing things with people outside your home, etc., and emotional well-being.

¹⁰ [Wunder et al. \(2008\)](#) apply the same approach for the Euro introduction in Germany, using the UK as a control. However, the authors do not test the differences across groups.

¹¹ See [Table A.2](#) for further details.

to test the marginal effects and interpret them in an expeditious way.¹² Eq. (1) is estimated with design and population size weights for each region and year. The design weights correct for sample selection bias, as different population groups have different likelihoods of being selected into any specific region's sample. The population size weights account for the population size in each region of each country. By using these weights, the samples of the Czech Republic and Slovakia approach comparability.¹³

2.2. Hypotheses

When faced with economic change, specific socioeconomic groups may feel more constrained in their economic choices or more uncertain about future outcomes. Some groups are likely to form distinct expectations regarding the economic situation, as argued in Puri and Robinson (2007), among others. We test two sets of hypotheses. First, for each group, we examine whether they are affected by the introduction of the Euro, by examining satisfaction with the economy just before and just after the event. We test how the introduction of the Euro in Slovakia affected individual satisfaction, and how this impact differs across socioeconomic groups. The null hypothesis to be tested is, for all k of interest:

$$H_0 : \alpha_{DD}^k = 0 \quad (2)$$

where k stands for groups distinguished by age (young, middle aged, and old), gender, type of settlement (urban or rural), employment status (employed or unemployed), marital status (married or unmarried), education (high or low), and the presence of children in household.

Second, we directly compare the change in the level of satisfaction with the economy for a specific socioeconomic group and its counterpart. We estimate Eq. (1) above, separately for each group. The null hypothesis is that the estimates of two groups, k and m , are equal, that is:

$$H_0 : \alpha_{DD}^k = \alpha_{DD}^m \quad (3)$$

where k stands for the same groups as above in Eq. (2), while m represents the k^{th} counterpart from the same socioeconomic group. Our test is performed using a seemingly unrelated estimation that combines parameter estimates for different groups and associated variance-covariance matrices.

The economics literature motivates possible differences in the impact of the Euro adoption across groups. Low income groups are likely to suffer more directly from the insecurity associated with economic changes, as suggested by Linz and Semykina (2008, 2010). Recently, Guzi and De Pedraza (2015) provide evidence that uncertainty and job insecurity have a negative effect on individual satisfaction. Typically, low incomes groups include unemployed and low-educated individuals. Also, those individuals who live in a rural area often have lower income than those who live in an urban area.

Hypothesis 1. Individuals that are unemployed, low-educated, or live in a rural area are affected more severely than their counterparts.

The elderly may fear for their savings, as in Lunt and Livingstone (1991), or fail to process the new information at a reasonable speed, as in Laroche et al. (2004). Also, older individuals may incur a higher psychological cost when converting prices into the new currency, as in Wunder et al. (2008), and have economic and political attitudes, e.g., support for democracy, competition, and income inequality, that are different from those of younger generations, as in Turkina and Surzhko-Harned (2014).

Hypothesis 2. Older individuals are affected more severely than younger and middle aged individuals.

Gender differences in preferences, in risk aversion, in behavior under uncertainty, and in the value attached to money have been documented in the literature, as in Croson and Gneezy (2009), Jonung (1986), Prince (1993), and Schubert et al. (1999), among others. The findings suggest that risk/uncertainty may be considered as an especially important cost for females. In addition, women may tend to consider money in terms of its purchasing power, while men value the power and status that money provides, as suggested in Prince (1993).

Hypothesis 3. Females are affected more severely than males.

Chaulk et al. (2003) suggest that the married are likely to be less tolerant to financial risks than single individuals, as the married are motivated by social norms to support the spouse and be involved in domestic joint decision making in relation to the distribution of income.

Hypothesis 4. Married individuals are affected more severely than the unmarried.

In addition, Chaulk et al. (2003) suggest that families with children are less tolerant to financial risks and uncertainty than those without children.

Hypothesis 5. Households with children are affected more severely than those without children.

¹² Results are also available for the ordered logit estimation upon request.

¹³ We multiply design and population size weights for each year and region. This approach is widely used in the literature when working with the ESS. In fact, the ESS also recommends their use. For example, Aleksynska (2011), Wallace and Pichler (2008), among others, apply the weights similarly.

2.3. Common trend assumption

The key assumption of the difference-in-differences approach is that of a common trend, that is, the assumption that the outcome variable in the treatment and the control group would move in a similar way if no treatment occurred. In our case, that amounts to assuming that the level of individual satisfaction with the economic situation would follow a similar path in Slovakia and the Czech Republic, were the former not to have adhered to the Euro.¹⁴ To test the common trend assumption, we apply the difference-in-differences approach for the periods before the actual treatment occurred.¹⁵ Given that Slovakia adopted the Euro in 2008, we analyze the 2006 and 2008 samples.¹⁶ As shown in Table A4, the difference-in-differences estimator is not statistically significant, suggesting no difference in individual satisfaction in Slovakia and the Czech Republic in 2006 and 2008. This supports the common trend assumption. We also test the common trend assumption for each socioeconomic group analyzed. As shown in Table A5, the common trend assumption is satisfied in all groups, except unemployed individuals.

3. Results

The estimation results are in Table 1. Several facts stand out. First, although Slovaks enjoy higher average satisfaction levels when compared to Czechs, as the positive coefficient on *Slovak* suggests, this effect is suddenly reversed in 2010, the year after Slovakia adopted the Euro, as noted by the negative coefficient on *Slovak*y2010*. The sign and significance of the coefficient α_{DD} suggests a clear and quantitatively meaningful decline in individual satisfaction with the economic situation following the introduction of the Euro.

Regarding the controls, age presents a U shaped relationship with economic satisfaction, while education, marital status, and income all affect satisfaction positively. Larger households are associated with lower satisfaction levels. Gender, whether employed or self-employed, and the sector of employment do not seem to have a specific association with individual satisfaction.

We next examine several subsamples, with a view to delve further into how different groups, defined by demographic and economic characteristics, display differing patterns of satisfaction with the Euro adoption, as hypothesized in the previous section. Results, which are clear and unequivocal, are presented in Table 2. First, all economic and demographic groups experience a decrease in reported individual satisfaction following the Euro adoption in Slovakia. Second, as hypothesized above, some groups seem to suffer more than others. Older individuals and less educated individuals report significantly larger decreases in individual satisfaction. The elderly report four times the decrease in satisfaction as compared to their middle aged counterparts.¹⁷ A similar four-fold decrease in satisfaction is observed among the less educated, as compared with the highly educated.¹⁸ Also, households with children report larger dissatisfaction with the economy than households without children. These differences are very substantial and statistically significant.

Fig. 1 presents the estimated changes in reported satisfaction with the economic situation for the different groups, and compares it to the overall estimate from Table 1. We can verify that the elderly experience a decrease in satisfaction that is on average twice that of the population at large. The unemployed experience a fall in satisfaction that is 1.52 times that of the population, the less educated 1.18 times, and those with children 1.17 times.

4. Robustness check

In order to check that our results are robust, the following steps are undertaken. First, we implement the difference-in-differences matching approach.¹⁹ Since our analysis is based on repeated cross-sectional data, the matching is performed three times, using the nearest neighbor matching methodology. In particular, for each individual from Slovakia after the Euro adoption (treatment) we find the single observation with the closest propensity score, that is, the single closest neighbor from each of the three comparison groups: (1) individuals from Slovakia before the treatment, (2) individuals from the Czech Republic before the

¹⁴ So, even though the Slovaks enjoy higher satisfaction with the economic situation than the Czechs before the treatment, this difference is not a concern as long as the expected trend in the dependent variable is the same in the absence of policy intervention. Before testing for the common trend assumption, we check whether the characteristics of individuals in treatment and control groups do not differ systematically, that is, we test for differences in the mean of the sample characteristics for Czech and Slovak individuals, before policy intervention. As Table A.3 in the Appendix shows, socioeconomic characteristics of individuals from both countries are very similar. Large p-values suggest that the characteristics of individuals from the two countries do not statistically differ in terms of age, education, self-employment, marital status, income, household size, type of settlement, employment in the public sector, and employment or self-employment in industry, finance, or social sectors, as detailed in Table A.2. We detect some differences in terms of gender, employment status, other work, and employment or self-employment in construction or agriculture, and in trade, tourism, transport, and communications.

¹⁵ See Beatty and Shimshack (2011).

¹⁶ Since the survey of 2006 was not conducted in the Czech Republic, we replace it with the survey of 2004. Using a linear regression with design and population size weights and test in means, we find that the level of satisfaction in the Czech Republic is the same between 2004 and 2008. This means that replacing the survey data of 2006 by 2004 is a reasonable substitution. Results are available upon request.

¹⁷ Interestingly, while the middle aged seem to experience a significant fall in individual satisfaction, this is not statistically different – at standard significance levels – from the fall in satisfaction by the young.

¹⁸ Moreover, in line with the results in Table 1, those living in larger households and those unemployed experience larger decreases in satisfaction with the economy and the difference to their counterparts is statistically significant. The evolution of food prices can potentially explain this result. In fact, according to the Slovak Central Bank, there was a slight increase (by 1.37%) in food prices in Slovakia around the dates of interest. However, its quantitative relevance is also slight and not sufficient to explain differences in satisfaction with economic situation for the low-income and larger families.

¹⁹ See Blundell and Costa Dias (2000), and Martins, Novo, and Portugal (2009).

Table 1

Results for Individual Satisfaction with the Economic Situation, OLS estimates.

Explanatory variable	Coefficient	S.E.
y2010	−0.176**	(0.068)
Slovak	1.039***	(0.143)
Slovak*y2010 (α_{DD})	−1.048***	(0.124)
Male	0.010	(0.072)
Age	−0.038***	(0.012)
Age ² /1000	0.289**	(0.112)
Higher-level Education	0.297***	(0.082)
Employed	0.322	(0.330)
Self-employed	0.354	(0.392)
Out of labor force	0.318*	(0.155)
Married	0.255**	(0.091)
High Income	0.902***	(0.075)
Household Size	−0.069**	(0.025)
Urban	−0.078	(0.073)
Public Sector	0.045	(0.102)
Industry	−0.071	(0.279)
Finance	0.194	(0.322)
Construction, Agriculture	−0.189	(0.327)
Trade, Tourism, Transport, Communications	−0.053	(0.285)
Education, Research, Health, Social Sectors	0.005	(0.325)
Constant	3.904***	(0.344)
Regional fixed effects	yes	
R ²	0.106	
# of obs.	6624	

Note: S.E. stands for the robust standard errors. Estimation accounts for design and population size weights. Default categories are the unemployed, for the employed, self-employed, and out of labor force; employed in the private sector for the employed in the public sector; and, for Industry, Finance, Construction & Agriculture, Trade & Tourism & Transport & Communications, Education & Research & Health & Social Sectors, the reference group is individuals not stating sectoral affiliation.

* Significant at 10%.

** Significant at 5%.

*** Significant at 1%.

Table 2

Results for Group Satisfaction with the Economic Situation, OLS estimates.

Groups	α_{DD}	S.E.	R ²	# of obs.	Test ($H_0: \alpha_{DD}^k = \alpha_{DD}^m$)	Prob. > Chi ²
Young	−0.175	(0.238)	0.107	785	$\alpha^{\text{Young}} = \alpha^{\text{Middle aged}}$	0.240
Middle aged	−0.513***	(0.134)	0.120	1884	$\alpha^{\text{Middle aged}} = \alpha^{\text{Old}}$	0.000
Old	−2.084***	(0.304)	0.184	1364	$\alpha^{\text{Old}} = \alpha^{\text{Young}}$	0.000
Female	−1.038***	(0.318)	0.115	3633	$\alpha^{\text{Female}} = \alpha^{\text{Male}}$	0.670
Male	−1.095***	(0.165)	0.109	2991		
Urban	−1.042***	(0.146)	0.111	4,342	$\alpha^{\text{Urban}} = \alpha^{\text{Rural}}$	0.680
Rural	−0.996***	(0.113)	0.122	2282		
Employed	−0.658***	(0.134)	0.094	3121	$\alpha^{\text{Employed}} = \alpha^{\text{Unemployed}}$	0.020
Unemployed	−1.588***	(0.351)	0.097	317		
Higher-level Educ.	−0.362**	(0.187)	0.117	1177	$\alpha^{\text{Higher-level Educ.}} = \alpha^{\text{Low-level Educ.}}$	0.000
Low-level Educ.	−1.236***	(0.144)	0.102	5447		
Married	−1.033***	(0.121)	0.109	3616	$\alpha^{\text{Married}} = \alpha^{\text{Unmarried}}$	0.954
Unmarried	−1.026***	(0.169)	0.122	3008		
With Children	−1.225***	(0.188)	0.121	2668	$\alpha^{\text{With Children}} = \alpha^{\text{Without Children}}$	0.039
Without Children	−0.898***	(0.107)	0.105	3932		

Note: The α_{DD} column corresponds to the diff-in-diff coefficient from Eq. (1) estimated for a particular socioeconomic group. S.E. stands for the robust standard errors. The Test column names the Hypotheses 1–5 described in Section 2.2, while the Prob. > Chi² column presents the p-value for each hypothesis. All estimations account for design and population size weights.

* Significant at 10%.

*** Significant at 1%.

treatment, and (3) individuals from the Czech Republic after the treatment.²⁰ The individual characteristics that are used as matching covariates to obtain the propensity scores are gender, age, employment, income, and the type of household. To check the

²⁰ We also applied the five nearest neighbors matching and the kernel density matching. The results are robust to these approaches, and are available upon request.

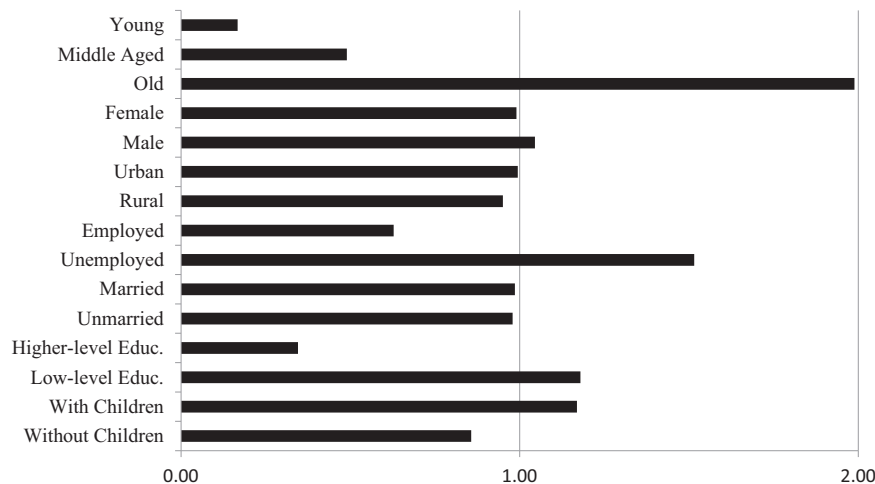


Fig. 1. Relative Size of Decrease in Satisfaction for Specific Groups and the Slovak Population as a Whole. **Note:** The figure reports the quotient $\alpha_{DD}^k/\alpha_{DD}^{overall}$, where the superscript k stands for the particular socioeconomic group. The line at 1 thus allows for easy comparison between the group and the overall population effect.

Table 3

Results from the Difference-in-Differences Matching and Balancing Tests.

Dep. variable: Satisfaction with economic situation 2008 to 2010			Average treatment effect on treated (ATT) −1.054*** (0.098)
Balancing tests			
Covariate	Mean of Treated	Mean of Control	P-value of difference
Male	0.386	0.361	0.134
Age	50.563	49.843	0.213
Employed	0.369	0.371	0.889
High income	0.572	0.595	0.161
Urban	0.544	0.553	0.565

Note: Standard error is in parentheses. Estimation is based on unweighted data. Balancing tests are presented for the period after the treatment.

*** Significant at 1%.

quality of matching, we apply balancing tests. Based on the samples of matched individuals we then estimate the average treatment effects on treated individuals (ATT) and compute the difference-in-differences matching estimator.²¹ The computation of the ATT was restricted to the region of common support.

The results of the difference-in-differences matching are presented in Table 3, and show that the sign, significance, and magnitude of ATT confirm the findings from OLS. Large p-values for balancing tests indicate that there are no significant differences in means of covariates between treatment and control groups at any of the three steps of the matching.

We explore three different additional avenues to examine the robustness of the estimates of Eq. (1). First, we control for major macro developments in both countries. As suggested in Di Tella et al. (2001, 2003), individual happiness levels depend on macroeconomic performance, increasing with gross domestic product, and decreasing with inflation and unemployment. Recently, Nikolaev (2014) provides evidence that people are happier in countries with higher economic freedom.²² As a robustness check, we substitute the regional dummies in Eq. (1) by inflation, the economic freedom index, and regional gross domestic product per capita and unemployment.²³ Even though the magnitude of the diff-in-diff estimator increases slightly relative to our benchmark ($\alpha_{DD} = -0.878$ and s.e.=0.185), the new estimate is not statistically different from that presented in Table 1 (p -value=0.16). We thus confirm previous evidence that Slovaks' satisfaction with the economic situation cannot be attributable to macroeconomic fluctuations.

Second, and to verify that it is Slovakia's accession to the Euro and not the Czech Republic's context at the time that is driving the results, we estimate Eq. (1) with Poland as a control country. Poland accessed the European Union at the same time as Slovakia

²¹ For a detailed discussion on the implementation of the difference-in-differences matching with cross-section data, see Blundell and Costa Dias (2002) and Todd (2008).

²² As stated in Depken and Sonora (2005), economic freedom is associated with "...an increased choice set and the freedom to act upon this set by individuals." See Economic Freedom of the World Reports <http://www.freetheworld.com>

²³ Macroeconomic variables vary little between 2008 and 2010. As a result, they display high collinearity with regional dummy variables, the dummy for Slovakia, and the dummy for the year 2010, so that the macroeconomic control variables and the regional dummies cannot be included together. For that reason, in the robustness exercise we report results with regional dummies alone, as well as with macroeconomic control variables alone.

and the Czech Republic, and shared a common past of decades of communist regime, facing similar difficulties and options in the transition to a market economy. With Poland as the comparison country, the diff-in-diff coefficient remains significant, but is now smaller than in the case of Table 1, with $\alpha_{DD} = -1.164$ and s.e.=0.179.

Third, and finally, we substitute satisfaction with the economy with two alternative indicators: satisfaction with life, and a subjective health indicator.²⁴ Neither suffers any deterioration in Slovakia, in the years under examination, as the Euro was introduced. The subjective health indicator does not suffer any significant variation ($\alpha_{DD}=0.026$ and s.e.=0.024). Satisfaction with life actually presents a significant improvement, even though quantitatively smaller than the decrease in satisfaction with the economy ($\alpha_{DD}=0.431$ and s.e.=0.108). Life satisfaction and satisfaction with the economy tend to move together. The fact that in the case of Slovakia in the wake of the introduction of the Euro satisfaction with the economy goes down while life satisfaction goes up makes the case under study especially important and deserving of attention. We consider that our results do not contradict the literature. First, as discussed previously, life satisfaction consists of several distinct domains that may be affected differently by Euro adoption. In line with Cummins (1996), the impact on non-material domains, such as intimacy and place in community, may outweigh the impact on a material domain, such as satisfaction with the economy. Second, the adoption of the Euro is an event of such magnitude that it is likely to induce contradictory changes in different domains of life satisfaction.²⁵

5. Conclusion

The economics and psychology literature has identified objective and subjective costs associated with the transition to a new currency. This paper estimates the changes in individual satisfaction with the economic situation following the Euro adoption for the population of Slovakia as a whole as well as for different population groups. We do so by matching these changes among Slovaks with those occurring in the Czech Republic in the same period. Given the long historical, social, and economic links between the two countries, and the contrasting choices as far as the Euro adoption, we believe this is a very valuable setting for such a test. Controlling for a broad set of socioeconomic characteristics and carefully matching Czechs and Slovaks, we are thus able to infer the impact of transition to the Euro.

The overall response to the Euro adoption is negative. Virtually all population groups experience a decline in individual satisfaction with the economic situation following the adoption of the new currency by Slovakia. More interestingly, the old, the unemployed, the poorly educated, and those with children suffer much more from the adoption of the Euro. Older individuals report decreases in satisfaction that are about twice as large as those estimated for the population as a whole. Our results suggest that before the adoption of a new currency more should be done in terms of public information and debate targeted at these specific groups.

The fact that satisfaction with the economy deteriorated following the introduction of the Euro contrasts with an increase in overall satisfaction with life, and cannot be explained by macroeconomic fluctuations, which are in any case, controlled for in our analysis.

Our results may help policy-makers understand the resistance – sometimes deemed “irrational” – to the Euro adoption, especially in countries that have recently gained accession to the European Union. Particularly interesting cases are the Czech Republic and Poland, both seemingly delaying the adoption of the Euro, and the latter witnessing the unraveling of a lively debate. In 2013, the leader of the ruling party in Poland, Jaroslaw Kaczynski, proposed a referendum on the Euro adoption, stating that citizens need to decide. Literally: “(...) *stop the fear and entrust the matter of the Euro to the Poles, in a referendum. Let the Poles decide on the Euro, and the government not be afraid to ask them*”.²⁶

The significant perceived costs uncovered in this paper suggest policy-makers should not ignore them when considering a sweeping change in economic context such as the adoption of a new currency. Though this paper says yet little about the nature of the cost, we expect that future research will uncover the nature – objective or subjective – of the psychological costs of transition to a new currency.

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Appendix A

See Tables A1–A5 here.

²⁴ See Table A.2 for further details on satisfaction with life and a subjective health indicator.

²⁵ We actually think the adoption of the Euro is precisely the instance that calls for closer attention to a specific domain, satisfaction with the economy in this case. We want to thank an anonymous referee for raising this issue.

²⁶ See *Financial Observer* (2013).

Table A1

Selected Sociodemographic and Macroeconomic Indicators in the Czech Republic and Slovakia, 2006–2010.

Source: Eurostat, European Social Survey.

Indicator	2006		2008		2010	
	CZ	SK	CZ	SK	CZ	SK
Satisfaction with economic situation, sample mean	n.a.	4.731	3.631	4.731	3.472	3.546
Sociodemographic characteristics						
Average population size, 1000 persons	10,269.1	5,391.4	10,424.3	5,406.6	10,519.8	5,430.1
Median age of population, years	38.9	35.6	39.1	36.2	39.4	36.9
Women per 100 men, persons	104.9	106	104.2	105.9	103.7	105.7
Gini coefficient	25.3	28.1	24.7	23.7	24.9	25.9
Macroeconomic characteristics						
Unemployment, %	7.1	13.5	4.4	9.6	7.3	14.5
GDP per capita, EUR	11,500	8300	14,800	14,300	11,900	12,100
Real GDP per capita, EUR	10,900	7700	11,700	11,400	9000	8900
Real GDP growth, %	6.7	8.3	2.0	5.6	2.2	4.1
Harmonized index of consumer prices (2005=100)	102.10	104.26	111.70	113.70	110.41	112.21
Government deficit, % of GDP	−2.4	−3.2	−2.2	−4.8	−2.1	−7.7
Inward FDI, flows as % of GDP	3.7	8.4	2.9	5.0	3.1	2.0
Outward FDI, flows as % of GDP	1.0	0.9	1.9	0.6	0.6	1.1
Export of goods and services per capita, EUR	7700	7000	9500	9500	9900	9800
Import of goods and services per capita, EUR	7400	7300	9200	9000	10,200	9,800
Nominal monthly gross wage, EUR	669.5	623.0	908.0	723.0	945.0	769.0
Real monthly gross wage, EUR	655.7	597.5	812.9	635.9	855.9	685.3
Nominal yearly gross wage, EUR	8034.0	7476.0	10,896.0	8676.0	11,340.0	9228.0
Real yearly gross wage, EUR	7868.8	7170.5	9754.7	7630.6	10,270.8	8223.9

Note: n.a. stands for not available. The European Social Survey was not conducted for the Czech Republic for 2006. Data are not weighted.

Table A2

Variables Description.

Variable	Description
Satisfaction with economic situation	on the whole how satisfied are you with the present state of the economy in [your country]? (0=extremely dissatisfied, 10=extremely satisfied)
Male	gender of an individual (0=female, 1=male)
age	age of an individual
high education	education level of an individual (=1 for advanced vocational, lower tertiary education, and for higher tertiary education, =0 for less than lower secondary and for secondary education, based on ES-ISCED classification)
Employed	employment status (1=employed, 0=otherwise)
self-employed	employment status (1=self-employed, 0=otherwise)
out of labor force	(=1 if an individual is a student, or retired, or out of labor force)
married	marital status of an individual (1=married or in a legally registered civil union, 0=otherwise)
Household size	household size, # of individuals
high income	self-placement income (=1 if an individual answered 3 or 4 to the question “which of the descriptions on this card comes closest to how you feel about your household's income nowadays? (1=very difficult on present income, 2=difficult on present income, 3=coping on present income, 4=living comfortably on present income)”, 0=otherwise)
Urban	area of residence (1=if an individual from urban area, 0=otherwise)
public	type of organization an individual works/worked (1=if an individual is employed in public sector, 0= if an individual is employed in private sector)
Sector	stands for a set of dummy variables (=1 if an individual is employed or self-employed in industry (Sector 1), in finance (Sector 2), in construction or agriculture (Sector 3), in trade, tourism, transportation, or communication (Sector 4), and in education, research, health, or social sectors (Sector 5), respectively, 0= if an individual does not state any of those sectors).
Regional dummies	stands for a set of regional dummy variables in the Czech Republic and Slovakia based on the Nomenclature of Territorial Units for Statistics classification (NUTS2)
Young/middle/old age groups with children	an individual is allocated into the particular group if he/she is below age 30, between age 30 and 45, and above age 64, respectively
Satisfaction with life subjective health	stands for a dummy variable (=1 if children live in a respondent's household, 0=otherwise) all things considered, how satisfied are you with your life as a whole nowadays? (0=extremely dissatisfied, 10=extremely satisfied) how is your health in general? (1=very bad, 5=very good)

* ES-ISCED stands for the European Survey version of International Standard Classification of Education classification maintained by UNESCO, in which ES-ISCED I is less than lower secondary education level, ES-ISCED II is lower secondary, ES-ISCED IIIb is lower tier upper secondary, ES-ISCED IIIa is upper tier upper secondary, ES-ISCED IV is advanced vocational, ES-ISCED V1 is lower tertiary education (BA level), and ES-ISCED V2 is higher tertiary education (> =MA level).

Table A3

Results for Differences in Socioeconomic Characteristics between the Czechs and Slovaks, 2008.

	CZ	SK	Difference	P-value of difference
Satisfaction with economic situation	3.729	4.832	−1.103	0.000
Male	0.491	0.415	0.076	0.005
Age	44.926	47.672	−2.746	0.137
Higher-level education	0.123	0.192	−0.069	0.166
Employed	0.503	0.429	0.074	0.016
Self-employed	0.083	0.076	0.007	0.601
Out of labor force	0.368	0.456	−0.088	0.008
Married	0.572	0.559	0.013	0.684
High Income	0.698	0.669	0.029	0.326
Household Size	3.006	2.990	0.016	0.954
Urban	0.694	0.689	0.005	0.960
Public Sector	0.382	0.439	−0.057	0.072
Industry	0.146	0.107	0.039	0.194
Finance	0.037	0.053	−0.016	0.300
Construction, Agriculture	0.089	0.062	0.027	0.041
Trade, Tourism, Transport, Communications	0.162	0.118	0.044	0.018
Education, Research, Health, Social Sectors	0.136	0.159	−0.023	0.274

Note: Design and population size weights for each region are applied.**Table A4**

Results from the Placebo Difference-in-differences Approach, OLS Estimates.

Explanatory variable	Coefficient	S.E.
Year	0.010	(0.081)
Slovak	1.037***	(0.272)
Slovak* Year (α_{DD})	−0.007	(0.128)
Male	0.076	(0.071)
Age	−0.065***	(0.014)
Age ² /1000	0.601***	(0.112)
Higher-level Education	0.402***	(0.091)
Employed	0.504***	(0.164)
Self-employed	0.474***	(0.198)
Out of labor force	0.488***	(0.151)
Married	0.216**	(0.084)
High Income	0.890***	(0.077)
Household Size	−0.032	(0.019)
Urban	−0.148	(0.088)
Industry	−0.174**	(0.083)
Finance	−0.080	(0.129)
Construction, Agriculture	−0.154	(0.179)
Trade, Tourism, Transport, Communications	−0.177	(0.136)
Education, Research, Health, Social Sectors	−0.024	(0.131)
Constant	4.555***	(0.454)
Regional fixed effects	yes	
R ²	0.122	
# of obs.	7563	

Note: S.E. stands for the robust standard errors. Since the survey of 2006 was not conducted in the Czech Republic, we replace it with the survey of 2004, as pointed in Footnote 12. Since we do not have the information for the *Public Sector* variable for the sample of the Czech Republic in 2004, this variable is dropped in our analysis. All estimations account for design and population size weights.

Default categories are the unemployed, for the employed, self-employed, and out of labor force; employed in the private sector for the employed in the public sector; and, for Industry, Finance, Construction & Agriculture, Trade & Tourism & Transport & Communications, Education & Research & Health & Social Sectors, the reference group is individuals not stating sectoral affiliation.

** Significant at 5%.

*** Significant at 1%.

Table A5

Results from the Placebo Difference-in-Differences Approach by Groups.

Groups	α_{DD}	S.E.	R ²	# of obs.
Young	−0.052	0.185	0.091	1424
Middle aged	−0.177	0.168	0.150	2094
Old	0.198	0.254	0.158	1414
Female	0.021	0.177	0.119	4088
Male	−0.083	0.127	0.135	3475
Urban	−0.059	0.206	0.129	4935
Rural	0.102	0.200	0.120	2628
Employed	−0.093	0.130	0.116	3421
Unemployed	0.831**	0.352	0.134	380
Married	−0.050	0.169	0.122	4231
Unmarried	0.071	0.143	0.137	3332
Higher-level Educ.	−0.537	0.328	0.167	890
Low-level Educ.	0.087	0.097	0.111	6673
With Children	0.052	0.160	0.147	3030
Without Children	0.002	0.164	0.108	4480

Note: S.E. stands for the robust standard errors. All estimations account for design and population size weights. OLS estimates are presented.

** Significant at 5%.

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