Can a Common Currency Foster a Shared Social Identity across Different Nations? The Case of the Euro

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Abstract

Fostering the emergence of a "European identity" was one of the declared goals of the euro adoption. Now, years after the physical introduction of the common currency, we investigate whether there has been an effect on a shared European identity. We use two different datasets in order to assess the impact of the euro adoption on the fostering of a self-declared "European Identity". We find that the effect of the euro is statistically insignificant. We interpret this result as suggesting that the euro did not have the desired positive effect on feelings of European identity. This result holds important implications for European policy makers. It also sheds new light on the formation of social identities.

JEL codes: D02, D03, D7, H8, Z10, Z18

Keywords: Social Identity, European Integration, Currency Union, Difference–in–Difference.

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The euro is far more than a medium of exchange. It is part of the identity of a people. It reflects what they have in common now and in the future.

European Central Bank Governor Wim Duisenberg, December 31, 1998.

The introduction of a common currency is not primarily an economic, but rather a sovereign and thus eminently political act [...] political union must be our lodestar from now on: it is the logical follow-on from Economic and Monetary Union.

Joschka Fischer, German Foreign Minister, Speech to the European Parliament, January 12, 1999.

Thanks to the euro, our pockets will soon hold solid evidence of a European identity. We need to build on this, and make the euro more than a currency and Europe more than a territory In the next six months, we will talk a lot about political union, and rightly so.

Laurent Fabius, French Finance Minister, The Financial Times, London, July 24, 2000.

To millions of European citizens, the euro notes and coins in their pockets are a concrete sign of the great political undertaking of building a united Europe. So the euro is becoming a key element in peoples sense of shared European identity and common destiny.

Romano Prodi, President of the European Commission, Speech to the European Parliament, January 16, 2002.

1 Introduction

The physical introduction of the euro on the 1st of January 2002 marked an ambitious and celebrated achievement in the development of the European Union.[1] The introduction was defended on grounds of financial and economic gains, and there is an ongoing and controversial discussion of the *economic* costs and benefits, especially in light of the recent financial crisis.

However, beside the economic rationale, the creation of the euro had also a political dimension. European treaties have engraved the aim of an "ever closer union" for the

[1] This date marked the physical introduction of the coins and bank notes in twelve member states. However, these states had already officially adopted the euro in 1999. At that time their national currencies ceased to exist and their exchange rates become fixed to each other. The old coins and notes continued to be used as legal tender over the period 1999-2002. Therefore, 2002 was the year when Eurozone citizens practically experienced the introduction of the common currency in their daily life.

European integration. In that perspective, the adoption of a common currency was seen as a significant step, creating the conditions for further political integration. Among the expected effects of the introduction of the euro, it was widely anticipated that it would foster a pan-European identity, a shared feeling of "Europeanness", in addition to (if not in place of) existing national identities. This emergence of a European identity would create a European *demos*[2] seen as a necessary condition for deeper political integration (Cederman 2001).

In this study we look at whether the euro has had an effect on European identity as it was anticipated by its political founders. First, employing a difference-in-difference design, we investigate whether feeling of European identity increased with the physical introduction of the euro. To do so we compare the evolution of self-declared European identity before and after the adoption of the euro in 17 countries of the EU who have already introduced it.[3] Second, we also consider a possible effect of the euro through the iconography of its coins. Unlike euro notes which do not have national elements, euro coins all have a national specific symbol on one side. We take advantage of a unique dataset on the diffusion of *foreign* euro coins in France after the adoption of the euro in 2002.[4] We test whether regional variations in exposure is associated to changes in European identity. Our two studies' results converge to the same conclusion. We do not find any indications that the introduction of the euro did have an effect on the self-perception of European citizens as "Europeans". This result contrasts sharply with the expectations of the political actors who engineered the creation of the euro.

Our study makes two significant contributions. First, it enhances our understanding of the dynamic of formation of a European identity. The absence of substantial effect of the introduction of the euro on identity is relatively surprising in the light of the expectations it had raised. This result invites one to reconsider the mechanisms by which a pan-European identity can spread and complement or replace existing national identities. It is also important to enlighten the political debate on the political European integration and the emergence of a European *demos*.

Second, it sheds new light on the debate about the factors influencing the emergence of a joint identity. Our results may seem surprising in view of the large behavioural economic and psychological literature that robustly demonstrates that humans strongly react to minimal

[2]This term refers to the "popular unit that exercises democratic rights, and as such, is usually thought to be constituted by a shared identity" (Cederman 2001). See Dahl (1991) for a formal discussion of the concept in political science.

[3]The euro has now been adopted by 19 EU countries. The integration of the Eurozone by Latvia (2014) and Lithuania (2015) is too recent for them to be included in the analyses.

[4]The dataset we use here, has information on the distribution of these 'foreign' euro coins relative to 'French' coins.

experimental manipulations of their perceived group identity along economically relevant dimensions such risk and social preferences.[5] A new shared currency is a strong manipulation of the experienced boundaries between an ingroup and outgroup. Yet our study suggests that it was not enough to foster the feeling of common European identity. This absence of an effect reminds us that the social world differs from a laboratory setting by the wealth of competing identity-building symbols available.

A paper related to ours is Guiso, Sapienza, and Zingales (2015), who study whether or not important milestones in the European integration process (the Maastricht treaty, the 2004 enlargement and the 2010 Euro crisis) generated public support for further integration. They find that these steps reduced pro-European sentiments and trust in European institutions in general. Guiso et al. (2015) also rely on survey data from the Eurobarometer. They do however not study the impact of any of these events or that of the Euro introduction itself on a self-declared European identity.

When assessing our results it is important to appreciate the limitation of the available data. Even though we corroborate our results with a large range of robustness checks that all confirm the main conclusion of this paper, it is obviously very difficult to provide conclusive answers to the question of the causal effect of the euro introduction. In particular using a difference-in-difference design at the country-level, even after controlling for country- and time-fixed effects, it is hard, if not impossible, to exclude all possible confounding factors such as selection into treatment, spillover effects and violations of the stable-unit treatment value assumption in a definite manner. These limitations have to be remembered when considering the evidence we provide on the possible effect of the euro on a feeling of European identity.

The remainder of the paper is organised as follows. Section 2 exposes how money in general, and the euro in particular, can influence identity formation. Section 3 describes the two datasets used in this study. Section 4 presents our results on the effect of the euro adoption itself and Section 5 presents the effect of the diffusion of euro coins on identity. Finally, Section 6 concludes.

2 Social Identity and the Euro

2.1 Social Identity and Money

The concept of social identity refers to how people self-define themselves as being similar to others in a given group and different from people outside this group (Jenkins 2014).

[5] See for example Chen and Li (2009), Shayo (2009), Benjamin, Choi, and Strickland (2010). A classical manipulation is the creation of groups according to preferences over Klee versus Kandinsky paintings, the so-called "minimal group paradigm" (Tajfel and Turner 1979).

Following Akerlof and Kranton (2000) a substantial amount of work has been done on the role of identity in economic behaviour and interactions.[6]

This interest in identity naturally leads to the question how identity is formed in the first place and how it changes over time. In the case of national identity, two perspectives can be opposed (Cederman 2001). An "essentialist" approach assumes that a national identity stems from an underlying existing cultural background (Smith 1986). On the contrary, a "constructivist" approach sees national identity as forged by institutions and the political actions of the rulers of a polity (Hobsbawm 1990, Habermas 1992).[7]

Feeding this debate, experimental research has shown that the allocation of individuals to arbitrary groups can easily lead to the emergence of ingroup versus outgoup feelings which significantly affect economic behaviour (Chen and Li 2009). One could conjecture that such effects also influence the formation of more deeply entrenched social identities (e.g. national identity) outside the laboratory. However, our understanding of the dynamics which lead to the formation of such social identities is still limited (Cederman 2001).

In that context, the effect of economic institutions on the formation of social identity has not attracted as much attention as it deserves. Money is one of such institutions. Following Simmel (1900), institutional economists have emphasized that trade is a social link and that by creating the possibility for trade in a community, money is an "abstract expression of the community" (Aglietta 2002). As such, it is natural to think that it can play a role in the identity formation of the community members.[8] This possibility has long been understood by political rulers. Helleiner (1998) argues that money plays an important factor in nation building and state identity. It creates a collective "monetary experience" which can foster the feeling of membership to a community. Money also practically takes the form of physical objects, coins and notes, which can be used to convey a symbolic iconography of the community, typically that of the nation state. Several studies have pointed at this strategic use of monetary iconography to foster national identity in countries such as the US (Lauer 2008), Tunisia (Hawkins 2010) or Denmark (Sørensen 2013).

[6] See for example Glaeser (2005), Bernhard, Fehr, and Fischbacher (2006), Chen and Li (2009), Heap and Zizzo (2009), Chen (2010), Chen and Chen (2011), Bénabou and Tirole (2011).

[7] Habermas (1992) defines nationalism as "a form of collective consciousness which both presupposes a reflexive appropriation of cultural traditions that have been filtered through historiography and which spreads only via the channels of mass communication". Constructivism is well illustrated by the famous quote from Massimo d'Azeglio after the Italian unification: "Italy has been made; now it remains to make Italians".

[8] In the view of Tajfel (2010), the simple fact to belong to a group, even for arbitrary reasons, is sufficient to create an identification with this group and lead to changes in behaviour such as in group favouritism. Money can be seen as a way to create a group (users) which differs in that respect from others, the non-users.

2.2 A Short History of the Euro and Its Intended Role in the Formation of a Pan-European Identity

The euro is currently the official currency in 19 out of 28 members states of the European Union (EU) and hence used by 340 million people in Europe (as of January 2017). The euro was first introduced as a new currency to the financial markets in 1999, but it was not before 2002 when European citizens were for the first time able to physically hold euro notes and coins in their hands and use them as a means of payment.

The creation of the euro has been the latest major step towards European integration. In its very early days, the European integration project was characterised by economic and political ambitions. The European Coal and Steel Community (ECSC, 1951) was an economic union. The planned European Defense Community (EDC, initiated in 1950) aimed to form a common European army. The EDC was however rejected by the French Parliament in 1954.[9] The failure of this political road to integration led the founding fathers to limit the European project to an economic one, for the time being. The economic integration has widely been seen by its promoters as carrying the seeds of a deeper political union, the so-called "theorie de l'engrenage" ("theory of the spill over effect").[10]

The "Treaty of Rome" (1957) established the European Economic Community (EEC). It had six founding countries (Belgium, France, Italy, Luxembourg, the Netherlands and West Germany). The treaty focused on economic issues such as the reduction of trade barriers and the creation of a customs union. The economic community was explicitly conceived as a stepping stone in the process towards a deeper political union, laying "the foundations of an ever-closer union among the peoples of Europe" (Rome Treaty, Preamble).

Over time this movement raised the issue of the lack of European *demos* to legitimise this process. To foster the creation of a pan–European political community, the emergence of a common identity became in itself a goal of European institutions. In 1973, European Head of States of the EEC adopted a "Declaration on European identity",[11] defining this notion in the context of "the dynamic of the construction of a united Europe". Going beyond a recognition of this notion, the 1983 Solemn Declaration on the European Union in Stuttgart agreed to promote "a closer cooperation on cultural matters, in order to affirm

[9] It encountered the opposition of both the communists on the left (wary of anti Soviet plot) and the Gaullists on the right (wary of defending national sovereignty).

[10] In his famous declaration which lead to the European Coal and Steel Community, Robert Schuman stated "there will be realized simply and speedily that fusion of interest which is indispensable to the establishment of a common economic system; it may be the leaven from which may grow a wider and deeper community between countries long opposed to one another by sanguinary divisions. [...] this proposal will lead to the realization of the first concrete foundation of a European federation indispensable to the preservation of peace."

[11] Bull. EC 12-1973, point 2501.

the awareness of a common cultural heritage as an element in the European identity. In that spirit, the EC/EU Commission progressively developed a cultural policy to foster a European identity (Shore 2006). A visible part of this desire to forge a shared European identity has been the creation of statehood–like symbols for the EC/EU: an anthem, the Ode to Joy (1985), a celebration day, the 9th May (1985), a European citizen status (1992) and a motto, "united in diversity" (2000).

The creation of such symbols may however masks the fact that EU institutions have not developed "a coherent and centralized identity policy" (Calligaro 2013). Indeed, nation-states are still in control of the most effective symbols of a collective identity, and the emerging European identity appears relatively weak in comparison to existing national identities. In that context, the transfer of a very visible national institution, the currency, was seen as potentially bringing this reality – a shared "Europeanness" – to the daily life of the European citizens.[12]

The introduction of the new currency was formally decided upon in the Treaty of Maastricht in 1992, which entered into force in 1993 (the "European Union" formally replaced then the "European Community"). Among the 15 EU countries, 12 adopted the euro in 1999 and saw it physically replace national notes and coins in 2002. Four additional countries joined the Eurozone since then (Table 8 in Appendix A shows the schedule of accession of EU countries to the Eurozone). Countries that have not yet adopted the euro have either an opt out (UK and Denmark) or do not yet fulfil all the criteria required.[13]

The design of the notes and coins reflected the importance of the interplay of European and national identities in the choice of the appropriate iconography.[14] The Maastricht Treaty attributed the design of the notes to European Central Bank (ECB) and the design of the coins to the member states (conditional on the approval of the ECB). This division of labour led to two very different choices for the iconography of the euro. In its design of notes, the ECB aimed at avoiding national bias as much as possible.[15] This led to the design of a primarily "European" notes devoided of any national reference. On the other the national states supported a visible presence of national symbols on euro coins.[16]

[12]The then EU Commission Jacques Santer explicitly stated: "The euro is also a powerful factor in forging a European identity. Countries which share a common currency are countries ready to unite their destinies as part of an integrated community. The euro will bring citizens closer together, and will provide a physical manifestation of the growing rapprochement between European citizens which has been taking lace for the last forty years or more." (Santer 1998)

[13]Countries who do not have an opt out are formally required to join the Eurozone, but may indefinitely stay out by not meeting the required criteria (e.g. Sweden).

[14]The following paragraphs are primarily informed by the excellent history of the design of the euro banknotes and coins from Calligaro (2013).

[15]This concern was also one the main factors in the choice of the name of the currency itself, the "euro" whilst historically meaningful names like "ecu" or "florin" were initially considered.

[16]We describe in Appendix B the process by which iconography of the euro notes and coins came to differ

The creation of a common currency used by citizens across the European continent with different languages and cultures has been a major step in the process of European integration. In the political process leading to the creation of the euro, this potential influence on a European identity was not ignored. On the contrary, it was part of its justification. More than ten years after its introduction, the data on European citizen's feelings of identity gives an opportunity to investigate this potential effect of money on identity in the context of this large–scale "social experiment".[17]

2.3 The Euro and the Making of a European Identity

The increasing salience of the notion of identity in EU politics has motivated the introduction of questions measuring such an identity in the Eurobarometer surveys (the leading polling surveys generated and used by the EU institutions). Such questions have been regularly present since 1992. Using this as well as other sources, a few studies have looked at the dynamics of the European identity over time. The evidence from such surveys does not point to a markedly rising feeling of European identity overall (Scheuer and Schmitt 2009). Large differences in stated European identity exist between countries but for a given country cycles of rise and fall in European identity are to be observed rather than an upward trend.

In spite of the intended role of the euro as a factor promoting a European identity, there has been surprising little research on assessing whether it had such an effect. A psychological study conducted in Austria over the period 1997-2002 suggested that European identity rose over the period due to the introduction of the euro (Meier-Pesti, Kirchler, and el Sehity 2003). One year after the introduction of the euro, Risse (2003) argued that answers on a range of questions in the Eurobarometer survey show an impact of the euro on European identity. Looking at what happened five years after the introduction of the euro, Jonung and Conflitti (2008) found a small effect on European identity. They used the question "Since using the euro, do you personally feel a little more European than before, a little less or would you say that your feeling of being European has not changed?" asked in 2006. Around a fifth of respondent answered positively. Unfortunately, this question does not offer a possible trade-off between a European identity and other alternative identities. As a consequence, it may face a positive bias making any "positive effect" not very informative about the strength of the actual evolution of European identity.[18]

in that way. Importantly, it seems that neither the neutral ECB nor the national states designed euro notes and coins with the aim to instrument its iconography to foster a European identity (Calligaro 2013).

[17]The introduction of a common currency across different nations has already occurred at other times in history. Previous examples includes the Latin Monetary Union (1865-1927), the Scandinavian Monetary Union (1873-1914) and the German monetary union (initiated in 1838 in the Zollverein and leading up to the creation of the Reichsmark with the political unification of Germany).

[18]For this reason we do not to use this question in our analysis. We prefer instead the "Moreno" question

In the light of the importance of the expectations placed over the role of the euro in fostering a European identity, the number of studies who tried to assess whether such an effect took place is rather limited. Overall, while a few papers have commented on the likely effect of the euro on European identity, the empirical evidence is patchy. The data available has however become richer as many countries have now adopted the euro for several years. We use this longer perspective to bring a more precise answer to this question.

We investigate here the possible effect of the introduction of the euro on identity. First, we study the overall effect of the euro introduction by comparing the evolution of self-declared European identity before and after the euro introduction in the 17 countries which have adopted the euro over the period 2002-2011.

Second, we investigate a specific way by which the euro could have had an effect: through the specific iconography of its coins. Euro coins mix common symbols (map of Europe, stars of the European flag) with national symbols specific to the country where they were minted. The iconography of coins and notes has been seen as a major tool to shape national identities (Helleiner 1998). The spread of non-national symbols with euro coins raise the interesting possibility that the coins' iconography contributed to blur boundaries between national symbols or even foster the emergence of a syncretic set of shared European symbols. Besides, the literature on identity has identified the experience of intergroup contact as an important factor reducing distance between groups (Pettigrew 1998). This effect extends to indirect contact (Pettigrew, Tropp, Wagner, and Christ 2011) where no face to face contact occurs.[19] In that regard, the diffusion of euro coins across countries offered to European citizens daily contacts with other symbols from other European countries. We use data on the diffusion of "foreign" euro coins on the French territory to assess here whether regions with a greater exposure to foreign coins may have experienced a closer connection to other European countries in terms of identity.

We therefore investigate two different possible effects of the introduction of the euro: first the effect of sharing a common currency with other European countries. Second, the effect of sharing some of their symbols of national identity through iconography on coins with other Europeans. With these two studies, we aim to assess whether the introduction of the euro may have favoured a common European identity through any of these two channels

(see Section 3) which offers a trade-off in terms of ranking between European and national identity. Respondents declaring themselves more European have to declare themselves (relatively) less attached to their national identity.

[19] In contrast to this social-psychology literature, a recent paper by Bisin, Patacchini, Verdier, and Zenou (2011) suggest that opposition between different social identities may be fiercer in situations of intergroup contact.

3 The Data

3.1 Effect of the Adoption of the Euro on European Identity

To examine the effect of the adoption of the euro on feelings of European identity we use data from the Standard Eurobarometer (EB). The EB is an opinion survey carried out on behalf of the European Commission and, with some exemptions, is conducted twice a year during spring and autumn. It is designed to provide regular monitoring of social and political attitudes of EU citizens and approximately 1,000 individuals from each member state are interviewed face-to-face every wave.

In choosing a relevant measure of identity, one of the most often repeated questions over time is the "Moreno" question (Moreno 2006, Duchesne 2008) "In the near future do you see yourself as...?" with the following response options; *(nationality) only*, *(nationality) and European*, *European and (nationality)* or *European only*. This question is designed to elucidate feelings of European identity by asking individuals to rank whether national feelings of identity supersede European feelings of identity and, unlike other cultural questions, it has not changed its wording since it was introduced in 1992. We consider this a distinct advantage of the data. This question is generally asked once per year although there is no consistent pattern as to whether it is surveyed in the spring or autumn editions of the EB.[20] Unfortunately, there are several years where the question was not asked at all (2006, 2008, 2009, 2011 and 2012) but we do not consider this to be a serious detriment.

Noticeably, the "Moreno" question is asked in all EU member countries in each wave. We therefore observe answers to this question from countries which have not yet adopted the euro (Czech Republic, Denmark, Hungary, Romania, Sweden, Poland, UK). We use these countries as a control group over the period when other countries adopted the euro. We can therefore adopt a difference-in-differences strategy, which assesses whether countries which adopted the euro saw a rise in European identity relative to the neighbouring countries that did not.[21]

In total we are able to exploit 19 waves of the EB spanning the years from 1995 to 2014, which results in more than 355,000 individual-level observations. Table 1 provides an initial summary of our dependent variable. It can be seen that the majority of respondents have either only national or national and European feelings of identity. Few individuals place European feelings first or feel European only.

In operationalizing this question, we decide to recode the relevant variable into four new variables that i) treats individual responses as a continuous variable, ii) examines the pro-

[20] In the first part of our analysis, we control for seasonal effects using dummies.

[21] The use of a difference-in-difference strategy is important given that previous research has suggested the existence of a (negative) trend in support for the EU institutions over the 90s and 00s (Calligaro 2013).

European Identity	Frequency	Percent
(NATIONALITY) Only	159,821	45.03
(NATIONALITY) and European	162,940	45.91
European and (NATIONALITY)	21,036	5.93
European Only	11,123	3.13
Total	354,920	100

Table 1: Eurobarometer - Answers to the question "In the near future do you see yourself as...?". Source: Eurobarometer 1995-2014.

portion of individuals answering "any European", iii) examines the proportion of individuals that answer "European first" and iv) examines the proportion of individuals that answers "European only".

Figure 1 displays the evolution over time of these four different measure of European identity for the first wave of twelve countries which adopted the euro in 2002. It shows that, when the European identity question is treated as a continuous variable, a relatively flat time trend emerges. However, when treating European identity as a series of binary variables we see that the proportion of individuals responding that they feel "European first" or feel "European only" are on a long term downwards trend over time. Clearly, it is important that we pick up such trends within a question.

Finally, the EB also includes several standardised socio-economic indicators such as education, marital status, age, occupation and income.[22] In addition, we complement these variables by merging in macro-economic country level GDP and unemployment data from Eurostat. All of these variables are ultimately statistically significant in our regression results, however, they do little to change our overall findings. A summary of these variables is provided in Table 3.

[22]Unfortunately, income data is not collected in the first EB wave of 1995 and after 2004. However, we capture these responses via the inclusion of a missing income dummy in our regressions.

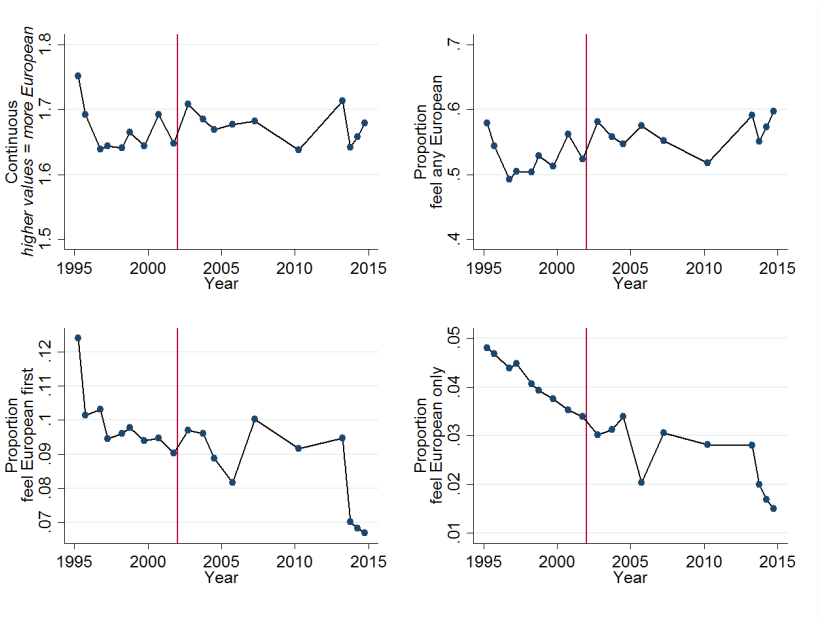

Figure 1: European Identity over time for the first wave of countries who adopted the euro in 2002. Each panel shows the evolution of a different measure of European Identity built from the EB question. Source: Eurobarometer 1995-2014, average yearly values.

Variable	Obs	Mean	Std. Dev	Min	Max
Identity (continuous)	354,920	1.67	0.72	1	4
Identity (any European)	354,920	0.55	0.49	0	1
Identity (European first)	354,920	0.09	0.30	0	1
Identity (European first)	354,920	0.03	0.18	0	1
Age left education	316,000	18.2	4.81	0	78
Age	350,991	45.32	18.30	15	99
Married	351,024	0.61	0.48	0	1
Occupation - self employed	351,024	0.08	0.27	0	1
Occupation - managers	351,024	0.10	0.29	0	1
Occupation - white collar	351,024	0.11	0.31	0	1
Occupation - manual	351,024	0.21	0.41	0	1
Occupation - unemployed	351,024	0.07	0.26	0	1
Income quartile	117,998	2.48	1.12	1	4
GDP per capita (in 2015 EUR)	527	20254	13622	1000	83800
Unemployment rate	495	8.96	4.28	1.9	27.5

Table 2: Eurobarometer 1995–2014 - Descriptive statistics

3.2 Effect of the Exposure to Other European National Symbols on European Identity

In the second part, we use a novel dataset that provides measures of the diffusion of euro coins of foreign origin into France after the introduction of the euro. After the 1st of January 2002, several projects sprung up that attempted to analyse the diffusion and mixing of euro coins across the European states (e.g. Euromobil and Eurodiff in Germany, Eurodiffusie in Netherlands and Belgium). Results from the Dutch euro diffusion project for example predicted that by 2004 half the coins in circulation in the Netherlands will be foreign.[23] For Germany, 52% of circulated 1 euro coins were in 2004 estimated to be foreign by 2012 (Stoyan 2003). Unfortunately, most of these diffusion projects suffer from a selection bias due the nature of the data-collection. Little financial aid and no official recording of coin diffusion caused researchers to primarily turn to the internet and self-reporting. A notable exception was the French Euro Spatial Diffusion Observatory (ESDO) study where researchers were able to incorporate questions on foreign coin diffusion in general surveys.[24]

We use this data for our study. The whole dataset collected by the ESDO is composed of 16 waves of observations between 2002 and 2011. All surveys, apart from the first one, sampled around 2,000 persons representative of the French population to describe the content of their purse. At each survey wave, the content of around 1,500 purses was reported, accounting for a total of 15,000 coins. This dataset makes it possible to measure the degree of exposure to foreign euro coins in different French regions. We measure the exposure to foreign coins by their proportion among the coins of the respondents' purses. Figure 2 shows such a measure for the year 2003. We are able to observe these differences at the level of the "region".[25]

We use this data, available for the years 2002-2007, 2009 and 2011, to estimate how the differences in exposure to foreign euro coins may have influenced the way French citizens perceive themselves as French versus European. Table 3 shows the average proportion of foreign euro coins in France in 2002 and 2011 at the regional level. The average proportion of foreign euro coins in each region increased from 7% in 2002 to 34% in 2011. French citizens have therefore seen a growing exposure to foreign coins over the period. This exposure was much more acute in some areas than in others with this proportion varying between 24% and 54% across regions in 2011. To study the effect of this exposure to euro coin, we match

[23] See van Blokland et al. (2002) and Hochstenbach (2003).

[24] See Grasland, Guérin-Pace, and Tostain (2002) and Grasland, Guérin-Pace, Le Texier, and Garnier (2012).

[25] Actually, this information is also available at the departmental level. "Departements" are, like "regions", administrative divisions. There are 95 departments in mainland France, which are nested within 21 larger regions. Nevertheless, since the Eurobarometer data is only available at the regional level, we aggregate the information on the proportion of foreign coins also at that level.

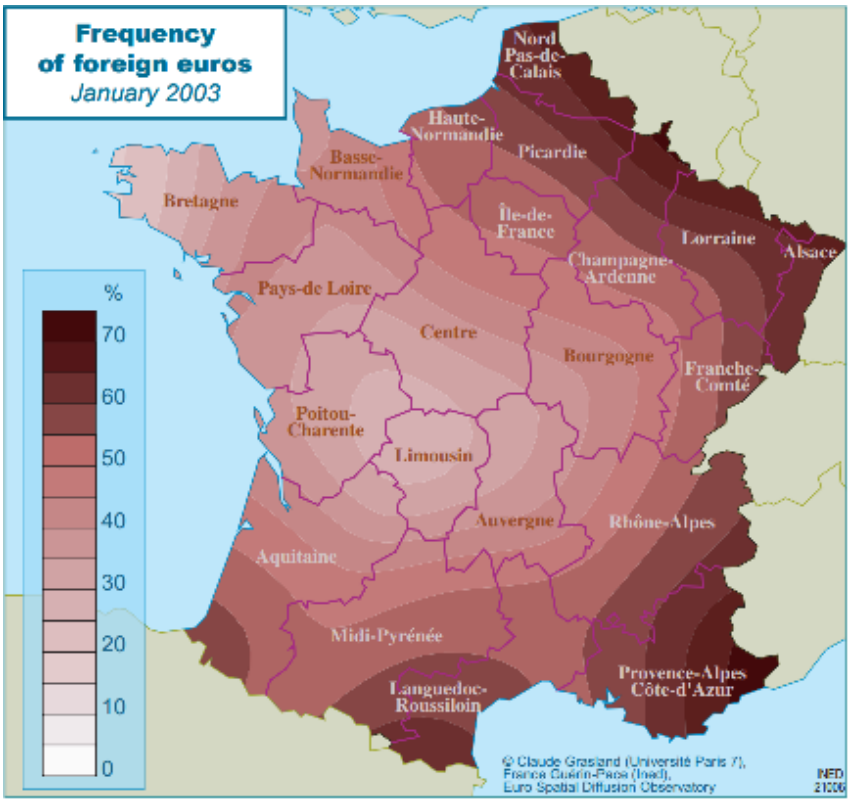

Figure 2: Diffusion of foreign euro coins in France, 2003. Share of sampled purses containing at least one foreign euro coin. Source: Claude Grasland, Euro Spatial Diffusion Observatory.

these local variations with the regional variations observed over time in European identity (EB question used in Section 3).

Variable	Mean	Std. Dev.	Min.	Max.	N
Proportion foreign coins - 2002	0.07	0.03	0.03	0.16	21
Proportion foreign coins - 2011	0.34	0.09	0.24	0.54	21
Frequency at least one foreign coin - 2002	0.36	0.12	0.13	0.63	21
Frequency at least one foreign coin - 2011	0.89	0.06	0.78	1	21

Table 3: Descriptive statistics on the likelihood to find "foreign" euro coins in the sampled purses in French regions in 2002 and 2011. The proportion is measured as the share of foreign euro coins in purses. The frequency is measured as the share of purses containing at least one foreign euro coin.

4 Effect of the Euro Adoption

4.1 Method and results

To investigate the effect of the introduction of the euro on feelings of European identity we estimate a series of increasingly sophisticated models. We start with simple difference–in–differences estimates around the introduction of the euro, which boils down to comparing sample averages before and after for treated and non-treated countries. We then extend this framework to include further time periods and include time trends which in turn is followed by a more complex model that allows for group-specific, fully flexible pre– and post–treatment trends of the dependent variable. Our results are in general very similar across all these models: we do not find any significant effect of the euro on a common European identity.

As mentioned before, the dependent variable in all estimations is the answer to the question "In the near future, do you see yourself as..." question in the Eurobarometer. Our data, and methodological approach, are visualised in Figures 3 and 4. We normalise time to $t = 0$ at the date of the euro introduction for each country. We match euro countries to non-euro countries and normalise the time period accordingly. For the 2002 euro countries, Denmark, Sweden and the United Kingdom serve as controls whilst Slovenia (2007) is matched with Hungary, Cyprus and Malta (2008) are paired with Bulgaria and Romania, Slovakia (2009) is paired with the Czech Republic and Estonia (2011) with Poland. In building this control group we paired neighbouring countries where possible. To highlight the difference between the "old" vs "new" euro countries we also present the raw data for only those countries that were part of the European Union in 2002 in Figure 4.

Figures 3 and 4 present scatterplots of the average answers to the EB per country and per year, around the adoption of the euro at $t = 0$. They also include linear lines separately for euro and non-euro countries before and after the introduction. Overall, there seems to be a general slight negative time trend of European feelings for both groups before the introduction of the euro. After the introduction of the euro the negative trends appears less pronounced. In addition, around $t = 0$, there is a jump in the regression lines of both groups.

To estimate a statistical effect of the adoption of the euro, all our estimations rely on a traditional difference–in–differences type setup with the estimating equation of the form:

$$y_{it} = \alpha + \beta_1 D_i + \beta_2 post_t + \beta_3 D_i \cdot post_t + \gamma X_{it} + \varepsilon_{it} \ , \tag{1}$$

where y_{it} is the sense of European identity, for individual i in time t. D_i is an indicator variable if the country adopted the euro until 2014, $post_t$ takes the value 0 for every time period before the euro introduction and 1 otherwise, $D_i \cdot post_t$ is the interaction of the two previous indicator variables and X_{it} is a vector of controls. Finally, ε_{it} is the random error term.

The coefficient on the interaction term, β_3, is then the coefficient of interest as it reveals to what extent euro countries increased or decreased their levels of European identity compared to control countries post–euro introduction.[26] We estimated (1) with and without control variables and found little impact on our final results.[27]

However, as can be seen from Figures 3 and 4 our data is not only limited to the initial before and after time periods around the euro introduction. We make use of many periods observed before and after by expanding the $post_t$ indicator variable so that it takes the value 1 for any value $t > 0$ and the value 0 for any value $t \leq 0$. We also include a new time variable, $time_t$, that measures the distance to the euro introduction and takes the values $-7 < t \leq 13$. Its function is to control for aggregate time trends in our data, which Figure 1 and Figures 3 and 4 suggest exist in some form in our dependent variable. Equation (1)

[26] This estimation disentangles the effect of the introduction of the euro from a time specific shock in two ways: first due to the control group of non-euro countries and second due to the different timing of euro introduction in different countries.

[27] We focus on linear models even though some dependent variables are binary. We do so for two reasons. First, it is known that nonlinear models typically have problems estimating appropriate marginal effects with complicated interaction effects. Second, recently linear models have been considered by many applied researchers as more robust in settings where the dependent variable is non-continuous, see Angrist and Pischke (2008) for instance. We nevertheless also estimated logit models and found that our results remain robust to alternate model specifications. For ease of interpretation we therefore only present models based on OLS.

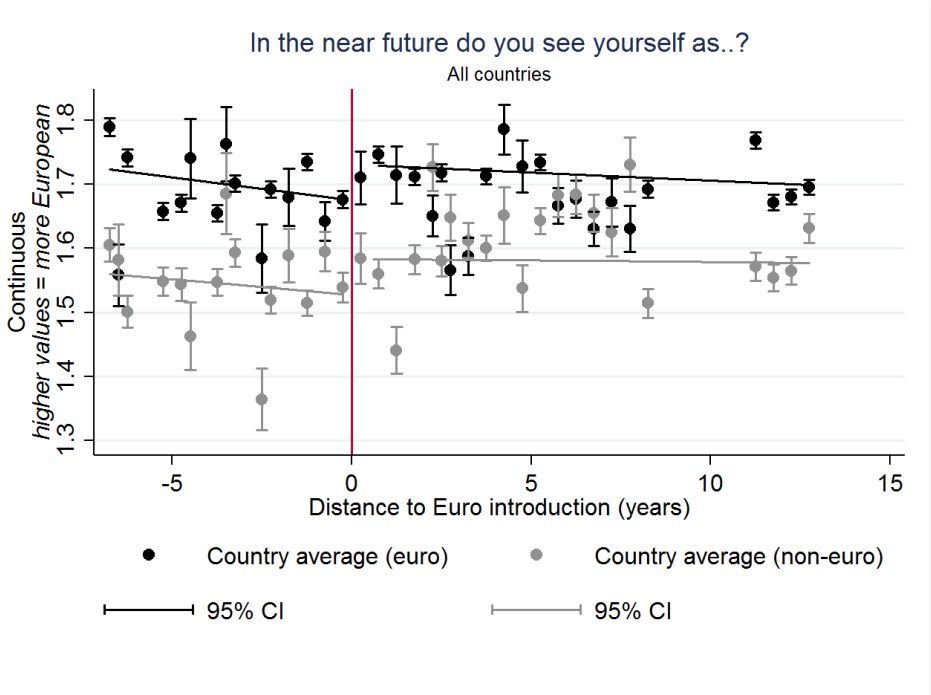

Figure 3: Graphical representation of the principle of the estimation procedure. A linear regression curve is estimated before and after the introduction of the euro. The estimation can compare the jump and the change in slope around the adoption time between euro countries and non-euro countries serving as a control group. Source: Eurobarometer 1995-2014, average country-year values.

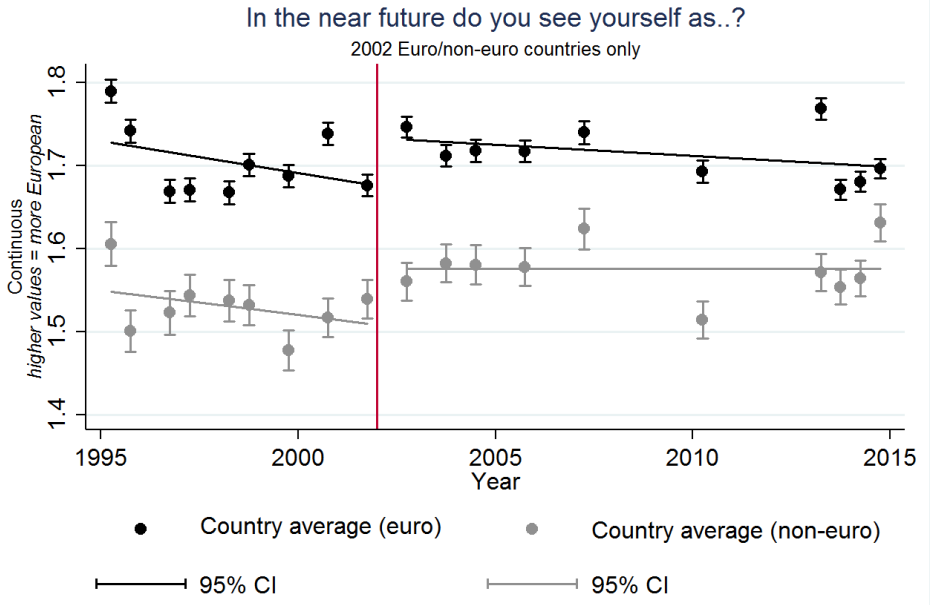

Figure 4: Graphical representation of the principle of the estimation procedure. 2002 Euro/non-euro countries only.

now becomes:

$$y_{it} = \alpha + \beta_1 D_i + \beta_2 post_t + \beta_3 D_i . \cdot post_t + \beta_4 time_t + \gamma X_{it} + \varepsilon_{it} \ . \tag{2}$$

The interaction, β_3, now picks up the average long-term effect of euro adoption by euro countries relative to non-euro countries and this model thus allows us to test whether changes to European identity persist into the time periods beyond the immediate "euro discontinuity".

However, (2) is restrictive in the sense that is it only allows for a global trending of the dependent variable before and after the introduction and makes the implicit assumption that pre-treatment trends are parallel between euro and non–euro countries. In addition it only computes an average post-treatment *level* effect of the introduction of the euro. A more nuanced framework would allow adopting and non adopting countries to be on different trends prior to the adoption of the euro. It would also allow the euro to have an effect on the trend of the adopting countries. We therefore further augment (2) by adding full interactions between D_i, $post_t$ and $time_t$ and finally also estimate:

$$\begin{aligned} y_{it} = \alpha + \beta_1 D_i + \beta_2 post_t + \beta_3 D_i \cdot post_t + \beta_4 time_t + \beta_5 D_i \cdot time_t + \\ \beta_6 post_t \cdot time_t + \beta_7 D_i \cdot post_t \cdot time_t + \gamma X_{it} + \varepsilon_{it} \ . \end{aligned} \tag{3}$$

Here our focus is on the parameters β_3 and β_7. Both parameters are of interest and represent the effect of the euro introduction on changes in European identity for euro countries relative to non-euro countries. Parameter β_3 represents the *immediate* change in the level that euro countries experience in feelings of European identity compared to non–euro countries after the introduction of the euro, whilst β_7 on the other hand identifies the change in the long run *trend* of European feeling between euro and non-euro countries post-euro introduction. The other parameters, β_4, β_5 and β_6, identify a common pre–euro time trend, a divergence for treated from this pre–euro time trend and the common change in time trend post-euro introduction respectively. Equation (3) now fully represents our graphical representation in Figures 3 and 4.

It is important to stress the challenges faced by such an empirical strategy. A country-level difference-in-difference approach will never identify any effect in a fully convincing manner. It cannot eliminate with certainty all the possibilities of selection and spill-over effects. To alleviate such concerns, we carry a wide range of robustness checks. Even though we do not find evidence for any of these issues to be a concern, we should not lose sight of the limitations inherent to the data when appraising our results.

Finally, it should be noted that our empirical design faces the challenge of identifying

the effect of a policy change which takes place in few large geographical entities.[28] This fact leads us to use standard errors clustered at the country level allowing for arbitrary within–country correlation of errors. However, since Bertrand, Duflo, and Mullainathan (2004) it is well–known that most standard errors, including clustered errors, tend to over-reject the null hypothesis with a 'small' number of clusters. In that sense, the clustered errors we use could be considered as too small and hence conservative because we do not reject the null.[29]

Table 4 reports the results from basic difference–in–difference estimations outlined in (1) where we use only the EB waves right before and right after the introduction of the euro. In each specification we employ a different coding of the dependent variable as outlined above. The results suggest that euro countries have statistically significantly higher values of European identity compared to non–euro countries. However, there is no statistically significant effect on the post-euro term or on the interaction term suggesting that euro countries did not significantly gain or lose feelings of European identity post-euro introduction compared to non-euro countries.

Table 5 presents the expanded difference–in–difference results that adds more time periods (1995 to 2014) to the model and additionally allows for a linear time trend. Results suggest a fairly similar picture to the previous model; euro countries have higher levels of European identity than non-euro countries and we now find a statistically significant effect of the introduction of the euro on feelings of European identity post-euro introduction. However, only the post-euro term is significant indicating that both euro and non-euro countries saw a rise of their feelings of European identity over the period. Even here, this effect can only be observed in two of the four ways we measure identity. The interaction term remains statistically insignificant indicating that there was no additional gain for euro countries. The key difference is that these results apply to the total time period 1995–2014 which suggests that there was also no differentially long-run effect of the euro introduction on feelings of European identity for euro and non-euro countries.

Table 6 presents our fully–fledged interaction models where we allow euro and non–euro countries to be on different time trends before and after the introduction of the euro. Results continue to confirm our earlier findings with euro countries displaying statistically significantly higher levels of European identity than non-euro countries, however, there is little effect from the introduction of the euro. As previously identified in Table 5 there is a hint that the European identity was higher just after 2002 in both euro and non euro-countries, from the positive coefficient on $post_t$ for the continuous definition of our identity variable. Looking at the DiD estimate of the adoption of the euro (β_3), the effects are

[28] This design is similar to Morton et al. (2015), since we also have observations from units within these entities. The structure of our empirical section hence follows this paper.

[29] Please consult Cameron and Miller (2015) for an excellent introduction to cluster-robust inference.

	Continuous	any EU	EU first	EU only
D_i, Country has or will adopt euro (β_1)	0.300***	0.217***	0.067*	0.016
	(0.077)	(0.049)	(0.027)	(0.015)
$post_t$, Post–euro introduction _euro (β_2)	0.032	0.025	0.004	0.003
	(0.019)	(0.013)	(0.007)	(0.004)
$D_i \cdot post_t$, "Treatment" interaction (β_3)	0.018	0.015	0.010	0.006
	(0.025)	(0.013)	(0.010)	(0.006)
Controls				
Age	Yes	Yes	Yes	Yes
Marital Status	Yes	Yes	Yes	Yes
Income Quartile	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
GPD per capita	Yes	Yes	Yes	Yes
GDP growth	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Observations	35298	35298	35298	35298
R^2	0.109	0.120	0.045	0.029

Table 4: Simple difference-in-differences results where only the waves right before and after are used for each country. All standard errors are clustered at the country level and given in brackets below. Each column estimates the same model with a different coding of the dependent variable: Continuous (variable is coded from 1 to 4, 4 being European only); Any European: binary variable, respondent declare a European identity; European first: binary variable, European identity rank before nationality; European only: binary variable, European identity and no declared national identity. *,** and *** indicate $p < 0.05$, $p < 0.01$ and $p < 0.001$ respectively.

	Continuous	any EU	EU first	EU only
D_i, Country has or will adopt euro (β_1)	0.162***	0.094**	0.053***	0.014*
	(0.036)	(0.029)	(0.010)	(0.006)
$post_t$, Post–euro introduction (β_2)	0.076*	0.062*	0.011	0.004
	(0.031)	(0.025)	(0.008)	(0.005)
$D_i \cdot post_t$, "Treatment" interaction (β_3)	-0.032	-0.031	-0.001	-0.002
	(0.041)	(0.031)	(0.009)	(0.005)
$time_t$, Linear time trend (β_4)	-0.002	0.002	-0.003*	-0.002*
	(0.004)	(0.003)	(0.001)	(0.001)
Controls				
Age	Yes	Yes	Yes	Yes
Marital Status	Yes	Yes	Yes	Yes
Income Quartile	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
GPD per capita	Yes	Yes	Yes	Yes
GDP growth	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Observations	327400	327400	327400	327400
R^2	0.080	0.093	0.029	0.017

Table 5: Difference-in-Difference with (parallel) time trends. All standard errors are clustered at the country level and given in brackets below. Each column estimates the same model with a different coding of the dependent variable: Continuous (variable is coded from 1 to 4, 4 being European only); Any European: binary variable, respondent declare a European identity; European first: binary variable, European identity rank before nationality; European only: binary variable, European identity and no declared national identity. The sample ranges from 1995 to 2014. *,** and *** indicate $p < 0.05$, $p < 0.01$ and $p < 0.001$ respectively.

	Continuous	any EU	EU first	EU only
D_i, Country has or will adopt euro (β_1)	0.174**	0.088*	0.063***	0.023*
	(0.047)	(0.037)	(0.014)	(0.008)
$post_t$, Post–euro introduction (β_2)	0.074*	0.051	0.016	0.007
	(0.036)	(0.025)	(0.011)	(0.006)
$D_i \cdot post_t$, Country has or will adopt euro	-0.015	-0.005	-0.004	-0.006
$\times$ Post–euro introduction (β_3)	(0.039)	(0.029)	(0.013)	(0.007)
$time_t$, Linear time trend (β_4)	-0.013	-0.002	-0.006	-0.004*
	(0.013)	(0.008)	(0.003)	(0.002)
$D_i \cdot time$, Country has or will adopt euro	-0.003	-0.002	0.003	0.002
$\times$ Linear time trend (β_5)	(0.012)	(0.008)	(0.003)	(0.002)
$time_i \cdot post_t$, Linear time trend	0.015	0.008	0.004	0.003
$\times$ Post–euro introduction (β_6)	(0.010)	(0.006)	(0.003)	(0.002)
$D_i \cdot post_t \cdot time_t$, Country has or will adopt euro	-0.008	0.001	-0.003	-0.003
$\times$ Post–euro introduction $\times$ Linear time trend (β_7)	(0.010)	(0.007)	(0.003)	(0.002)
Controls				
Quarter survey was conducted	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes
Marital Status	Yes	Yes	Yes	Yes
Income	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
GPD per capita	Yes	Yes	Yes	Yes
GDP growth	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Observations	327400	327400	327400	327400
R^2	0.080	0.093	0.029	0.017

Table 6: Difference-in-differences with different trends. All standard errors are clustered at the country level and are given in brackets below. Each column estimates the same model with a different coding of the dependent variable: Continuous (variable is coded from 1 to 4, 4 being European only); Any European: binary variable, respondent declare a European identity; European first: binary variable, European identity rank before nationality; European only: binary variable, European identity and no declared national identity. The sample ranges from 1995 to 2014. *,** and *** indicate $p < 0.05$, $p < 0.01$ and $p < 0.001$ respectively.

not significantly positive. The effect of the euro on long-run trends in feelings of European identity for treated countries (β_7) also appears statistically insignificant. There is therefore little evidence to suggest a jump, or longer run trend break, in feelings of European identity after the adoption of the euro.[30]

Overall then, from these primary specifications and given the data at hand, we must conclude that, the introduction of the euro seems not to have had the anticipated effect on feelings of European identity, either in the short term (jump) or the long run (trend).

4.2 Robustness and Specification Analysis

We are aware that the previous analysis is based on particular assumptions such as linear functional forms, specific data ranges and even the type of dependent variable. In this section we aim to provide various robustness and specification tests that relax some of these assumptions and allow for a more nuanced interpretation of our results.

Our core set of results (Table 6) is estimated over a relatively long period of time from 1995 to 2014. Specifically, the long post-treatment period (2002–2014) requires a permanent and long-lasting "identity effect" to show in our results. It could be argued that events which are distant in time from the date of the euro adoption could affect our estimation and limit our ability to detect an effect around that date. To test this, we resorted to several augmented econometric specifications.

Firstly, we fell back to equation (1) that tested for a "European identity" effect using classical difference–in–differences analysis on only two time periods (one year before/after). We increased the time span incrementally by one year up to a maximum of five years but could discern no statistically significant effects in the interaction term in any of these results. This suggests that there was no average effect in the short run on feelings of European identity for euro-adopters.

Secondly, we expanded equation (3) to accommodate higher order polynomial time trends. This can be done simply by inserting additional squared and/or cubic terms of $time_t$ and interacting these polynomial terms with all terms that contain $time_t$. The resulting econometric output is difficult to tabulate due to the complexity of interpreting so many interaction terms; however, the associated graphical outputs and statistical significance's are easy to analyse. Overall, higher order polynomial time trends do little to improve model fit, frequently mimicked linear fits and the relevant statistical parameters continued to remain statistically insignificant.

[30] We also ran additional DiD analyses shortening the window of observations to capture the possibility of a short-lived jump in identity which would have occurred after the adoption. Doing so, we did not find any evidence of such a jump. Moreover, joint significance testing of various combinations of β did not reveal any statistically significant results

Finally, to be as fully flexible as possible, we implemented a non-parametric form of equation (3) but leaving out additional controls. This estimation is presented in Figure 5. At the time of the euro adoption in 2002, average values of European identity increased leading to a trend break for both euro and non-euro adopting countries. However, Figure 5 suggests that this break was non-differential across euro/non-euro countries, either in the short-run or long-run, leading to the conclusion that the introduction of the euro did little to achieve increased feelings of European identity in euro adopting countries. These results are markedly similar to those presented in Table 6.

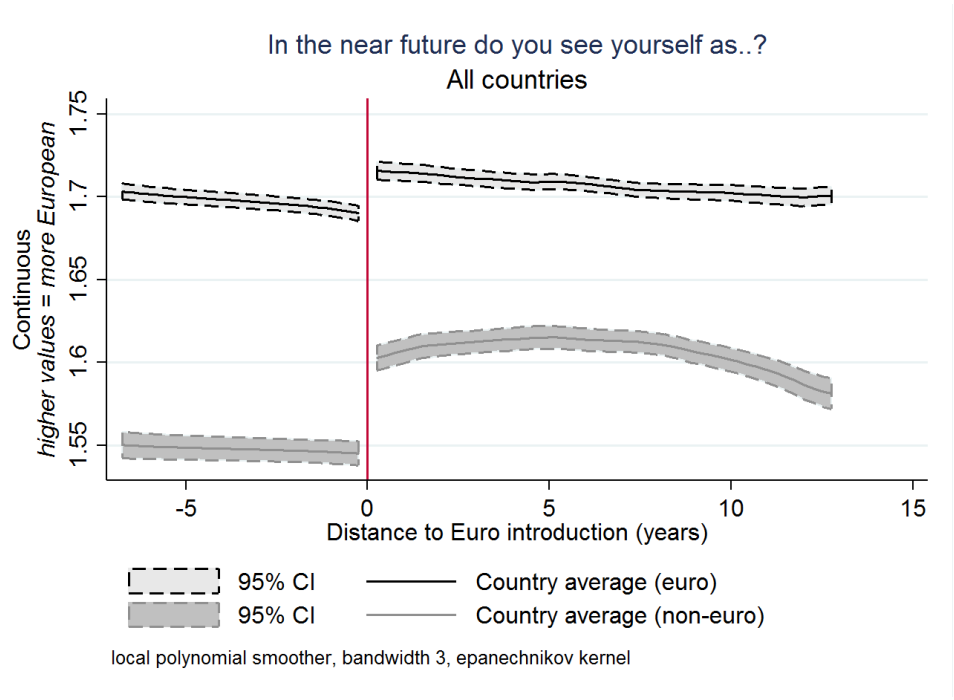

Figure 5: Non-parametric smoother of feeling of European Identity for euro/non-euro countries. Source: Eurobarometer 1995-2014

We also investigated the use of a different dependent variable by employing the question: *generally speaking, do you think that (your country's) membership of the European Community (Common Market) is ...? 1 A bad thing; 2 Neither Good or Bad; 3 A good thing.* Results suggested a similar picture to our main results on European identity. Support for EU membership is higher for euro countries than for non-euro countries and the introduction of the euro caused a marginal trend break from positive to negative. However, no statistically significant effects could be found for differential effects by euro vs non-euro countries (in both the short and long run) thereby further suggesting that the introduction

of the euro did not singularly affect euro-adopting countries.

4.3 Potential Endogeneity of the Euro Treatment and Other Potential Threats to Identification

In this section we discuss several potential concerns that could threaten the identification of the effect of interest. A key issue when evaluating treatment effects using a difference-in-differences is to dispel concerns that the treatment may be correlated with unobserved variables affecting the explained variable. When conducting an analysis with few countries, it is hard to eliminate with certainty the possibility of confounding unobserved shocks. We therefore here consider the most likely scenarios of potential confounds: selection bias, reverse causality, unobserved shocks and spillover effects.

Our results would be biased if the introduction of the euro was triggered by pro–European sentiments. In that case we would have a selection bias: countries with different levels of European identity would have different likelihoods to adopt the euro. For example, our data clearly shows that euro-adopting countries have stronger levels European identity both before and after the introduction of the euro. This may suggest systematic treatment assignment and one should therefore limit the interpretation of our results. However, we note that the historical evidence about the process leading to the euro adoption could suggest that the introduction was not related to changes in European identity at the time of the physical introduction of the euro. The adoption of the euro was typically decided politically many years before its physical introduction. This is particularly clear for the first wave of countries that switched to the euro in 2002. Their decision to join the common currency union was not made in 2002, but ten years before when they signed the Maastricht Treaty in 1992, or more accurately even twelve years before, in 1990, when the prospect of the European Monetary Union was decided by European countries and its first phase officially started. Of course, selection into treatment might be occur over the very long which we may not able to control. This should be kept in mind accordingly.

For reverse causality to be a concern for our analysis, the decision to adopt the euro in 1992, would have to have been made in anticipation of a shock on European feelings around 2002. Such a reverse causality could lead to a null result if the European Head of States had anticipated in 1992 a drop in European feeling to come in 2002. To counteract that expected drop in the future, they could have decided to adopt the euro then. The positive effect of the euro from 2002 onwards would have then perfectly counteract the anticipated drop in European identity after 2002. The far-fetched nature of such a scenario does not need to be stressed. In any case, the existing historical evidence points to a very different process leading to the adoption of the euro. The decision to create the euro was not driven

by variations in public feeling for or against Europe. Rather, the European integration was characterised by a top-down approach, see Haas (1967). While we cannot know for sure the details of how the decision was made, the available historical evidence points to a political decision process driven by Head of States with little influence from short term feelings about European identity.

One country stands out though, Denmark. In 2000, this country held a referendum on the adoption of the euro and voted against it with a margin of 53% to 47%. This country therefore explicitly selected itself out of the treatment two years before the physical introduction of the euro.[31] This self selection could potentially create a downward bias against an existing effect of the euro adoption. For it to be the case, Denmark's trend in identity should run against the result of the referendum and be on the rise. If a country like Denmark was experiencing a rise in European identity while being at the same time more likely to vote against the euro, it would both end up in the control group and bias downward a potential effect of the euro adoption. Such a link between a positive trend in European identity and a negative vote against the euro seems unlikely and contradicts the fact that adopting countries have higher level of European identity. In any case, in order to check for such possibility, we re-ran our estimates without Denmark in the control group and found results qualitatively identical in our three models.

Unobserved shocks in a group of countries could also bias our results. For instance, an unrelated drop in European identity in adopting countries after 2002 could nullify an existing positive effect of the introduction of the euro. A design that exploits the different timing of adoption across different countries helps mitigate this concern. Given the staggered entry in the euro, 30% of the adopting countries joined after 2007. When doing the estimation on the 2002 group and the post-2002 group we get a very similar result. It suggests that results are not driven by some time-specific shock over the treated or the control group. That being said, we see two potential shocks which happened over the period.

In 2004, the UK and Sweden opened their borders to Eastern European workers.[32] If this had led to an increase in European identity it would bias downward our estimates as these two countries were part of the control group. A cursory look at the time series of European identity in these two countries does not suggest any jump in European identity after 2004. Indeed, immigration from Eastern Europe has been associated with a rise in anti-EU feelings. To make sure this specific shock did not bias our results, we re-ran our model without the UK and Sweden and without Ireland in the treatment group (a country which also opened its borders). We find very similar results in our different models when excluding these countries.

[31] We thank a careful reviewer for pointing this out.

[32] We are again grateful to an anonymous referee who pointed this out to us.

In 2008, the financial crisis hit Europe and turned into a euro crisis for many years. It is thought that this crisis hurt the support for the euro in euro countries and it may have decreased feelings of European identity.[33] To control for such a possibility, we re-ran our models without the years post-2008. Here again, we observe the same results with no evidence that the euro has had a positive impact on euro countries before 2008.[34]

Finally, we should consider at least two additional effects which could induce a downward bias in our estimation of an effect of the euro introduction. First, there could have been an anticipation of the euro introduction in countries adopting the euro before hand. This could have led to an effect on European identity *before* the physical introduction of the euro. To control for such a possibility, we ran additional analyses redefining the treatment variable *post* as starting one, two, three years before the physical adoption of the euro. We did not find any evidence that an effect on European identity occurred before adoption itself.

Second, there could be a spillover effect whereby citizens from non-adopting countries could feel more European as they visited other countries having the euro. Such a possibility is indeed present given the rise in European identity for both groups of countries around the time of the euro adoption. We only estimate the difference in European feelings between adopting and non-adopting countries so the existence of spillover effects could dampen our estimates of the effect of euro adoption. We believe such a spillover effect is unlikely to have been important though. If citizens from non-euro countries were feeling more European as a consequence of using the euro, we could expect a growing support for the adoption of the currency. On the contrary, Sweden voted in a referendum not to move towards the adoption of the euro in 2003, Denmark voted to keep its opt-outs from the EU in 2015 with the same share of voters who rejected the euro in 2000 and the UK voted to leave the EU in 2016

Overall then, we note that significant identification challenges may still persist in our data and modelling technique. Results should therefore be interpreted with some caution. However, with a range of robustness tests in addition to our historical argumentation we believe that our results are credible and suggest an interesting and counter-intuitive result.

5 The Diffusion of Foreign Euro Coins in France

In this section we study whether sharing symbols of national identity through iconography on coins increases feelings of European identity. In order to do so, we regress local variations

[33] This point is actually not completely clear. As the euro crisis unfolded, European news took a large place in national news coverage, potentially stressing the shared fate of European citizens.

[34] It is also noteworthy that our models control for economic indicators such as GDP per capita, GDP growth and unemployment rate. Hence, our models are able to control for some possible effects of different economic trends.

in self-declared European identity on the proportion of foreign coins and time and region fixed effects. Using ordinary least squares, we estimate the model

$$y_{rt} = \beta_1 Prop_{rt} + \beta_2 X_{rt} + \epsilon_{rt}, \tag{4}$$

where $Prop_{rt}$ is the proportion of foreign euro coins and y_{rt} is the mean answer to the "Moreno" question in the Eurobarometer for region r in year t. As in the previous section, we use four complementary ways to code this variable. Our results are nevertheless again unaffected by differences in coding. The location of the French EB survey participants is registered at the regional level (there are 21 regions France). The vector of time controls and region fixed-effects is captured in X_{rt} and ϵ_{rt} denotes an error term clustered at the regional level.

Our main explanatory variable of interest is the local proportion of euro coins found in the purse of survey respondents (we observe this proportion for the years 2002 - 2007, 2009 and 2011). We set the proportion of foreign coins to zero for one year before the Euro introduction in 2002.[35] Table 7 presents the results. As mentioned before, the estimated model remains the same within this table but every column uses a different coding of the dependent variable. We include time and region fixed-effects in every regression and we employ bootstrapped standard errors clustered at the regional-level.

The proportion of euro coins is never significant in any specification. These conclusions remain the same if we use robust standard errors. Therefore, the regional changes in stated feelings of European identity are uncorrelated with the proportion of foreign euro coins observed locally in French citizens' purses. It is again also noteworthy that the standard error estimates are relatively small, between 0.06 and 0.38. Moreover, the R^2s are close to one as the set of time and region dummies captures most of the variation in the dependent variable. Finally, we also conducted a robustness check similar to the one the previous section where we excluded all observations after 2007 in order to exclude the possibility that the results were driven by the financial crisis. Table 9 in the appendix reports those results. We find that the excluding post-2007 observations does nothing to change our conclusions except that it increases the standard errors.[36]

Overall, these results suggest that the relative exposure to foreign euro coins may not have had a substantial effect on self-declared European identity in France. It also suggests

[35] But the results remain virtually unchanged if we drop all observations before.

[36] We also estimated a maximum-likelihood version of a spatial-autoregressive models with spatial-autoregressive disturbances (SARAR model). In order to do so we collected a symmetric spatial weight matrix with indicating whether two regions are contiguous or not. We again find that the coefficient on the proportion of foreign coins is by no means statistically or economically significant using all four definitions of the dependent variable.

	(1) Continuous	(2) Any EU	(3) EU first	(4) EU only
Proportion of foreign coins at regional level	0.223	0.018	0.123	0.082
	(0.34)	(0.17)	(0.13)	(0.06)
Time fixed-effects	Yes	Yes	Yes	Yes
Region fixed-effects	Yes	Yes	Yes	Yes
Observations	189	189	189	189
R^2	0.996	0.98	0.85	0.68

Table 7: OLS regression with French region level data. Each column estimates the same model with a different coding of the dependent variable: Continuous (variable is coded from 1 to 4, 4 being European only); Any European: binary variable, respondent declare a European identity; European first: binary variable, European identity rank before nationality; European only: binary variable, European identity and no declared national identity. The sample includes the years 1999, 2002-2007, 2009 and 2011. Standard errors are block-bootstrapped at the regional level and given in brackets below. *, ** and *** indicate $p < 0.05$, $p < 0.01$ and $p < 0.001$ respectively.

that the process of identity formation is more complex than previously assumed. In particular, the exposure of individuals to symbols may have only a limited effect because individuals might not simply be passive recipients of identity imposed upon them from outside. They might be active in selecting and processing the symbols surrounding them when defining whether and how these symbols are relevant for their own identity.[37]

6 Concluding Remarks

This study examined whether one of the stated *political* goals of the European monetary union was achieved: fostering a common European identity. While there is an omnipresent and controversial debate about the *economic* costs and benefits of the European Union in general and the euro in particular, there is little research whether one important political goal has been reached. This study addressed this deficit by investigating whether the introduction of the euro favoured a feeling of European identity. We observed that the introduction of the euro as a common currency had not been followed by a rise in feelings of European identity in the 'treated' countries, even though evidence suggested a general rise in feelings of European identity for all countries.

This finding is suggestive of the fact the euro did not lead to an increase in European

[37]For recent evidence from the laboratory suggesting that people might actively choose their identity, please see Hett, Kröll, and Mechtel (2016) and Paetzel and Sausgruber (2016).

identity. As mentioned previously, one need a degree of caution when drawing conclusions from cross-country difference-in-differences as not all possible confound can be excluded with certainty. For instance, countries who chose to adopt the euro self-selected into the Eurozone. In practice, they differed in characteristics from non-adopting countries. For a start, they had a higher level of European identity to start with. To alleviate these concerns about possible confounds, we conducted a range of robustness checks. Whereas these cannot in themselves eliminate all confounds, it is notable that they support a causal interpretation of the results

In a complementary analysis, we do not find evidence of an effect of coins iconography (sharing symbols of national identity across the Eurozone). Overall these two results converge to support the idea of an absence of evidence that the introduction of the euro was associated with increased feelings of European identity.

This research brings important insights to the debate on the dynamics of European integration. More than ten years after the adoption of the euro, the question of identity is at the heart of European politics. The rejection of the European Constitution by Dutch and French voters in 2005 ended the attempt to add another significant symbol of nationhood to the EU. Over the recent years many countries have seen a rise of nationalist and euro–skeptic parties. In 2016, a country, the UK, voted to leave the EU. Such a decision was unprecedented in the the history of the European project. Noticeably, while the emergence of a strong European identity fails to eventuate, regional identities are resurgent (Scotland, Catalonia, Wallonia). These joint evolutions underlines the difficulty to engineer a new pan-European identity. In that context, our study suggests that, in spite of high expectations, the euro may not been a major factor in the building of a European identity. It seems that either the build-up of a shared European identity takes place on a longer time scale (if at all), or that other institutional innovations may be better at creating a shared identity. The move towards a de facto election of the President of the European Commission by European citizens is, in that regard, also interesting for its potential effect on European citizens identity.

Beyond that, our study also contributes to the overall understanding of the mechanisms underlying the formation of social identity. In laboratory experiments it has been found that small, seemingly irrelevant manipulations in the framing of situations can create artificial groups generating in-group/out-group dynamics. Our results could be seen to contradict the laboratory results. We find that a large change in the daily life of citizens, which creates de facto a shared experience across different countries, did not lead to a greater feeling of common identity. In the debate on the formation of national identities this result seems to undermine the constructivist approach which assert that national identity can be engineered through the creation and communication of common symbols and the creation of institutions

which induce a shared experience. However, we suspect that rather than dismissing the constructivist approach in favour of an essentialist one, our result may simply dismiss a naive version of it. The institutions of the European Union are not in an empty political and institutional field in their attempt to foster the emergence of a European identity. They typically face the competition of national institutions and politicians who also activate and spread symbols of a shared community (Cederman 2001). For instance, whilst the European Union has attempted to introduce a European dimension in national educational curriculum (Calligaro 2013), the design of programs remains in the hand of national bodies where the teaching of history is typically centred around a national narrative.[38] The national identity narrative may also be seized by national politicians who find it easier to use and trigger existing feelings of identities, rather than to try to create new ones. In that perspective, the understanding of the emergence/persistence of national identities may call for the emergence of a *political economy of identity* where social identities are strategic assets which are the object of a contest between different political actors.

[38]See the recent debate in the French reform of history curriculum in primary school where its role in forming a national identity was explicitly at stake (Monde 2015).

A Timeline of accession to the EU and to the Eurozone

Country	EU Accession	Euro Adoption (physical introduction of the euro)
Austria	1995	2002
Belgium	1952	2002
Finland	1995	2002
France	1957	2002
Germany	1957	2002
Greece	1981	2002
Ireland	1973	2002
Italy	1957	2002
Luxembourg	1957	2002
Netherlands	1957	2002
Portugal	1986	2002
Spain	1986	2002
Slovenia	2004	2007
Cyprus	2004	2008
Malta	2004	2008
Slovakia	2004	2009
Estonia	2004	2011
Latvia	2004	2014
Lithuania	2004	2015

Table 8: List of Euro member states, as of May 2015.

B The Design of Euro Notes and Coins

The ECB Working Group on "Printing and Issuing a European Banknote" (WGPI) initially planned to leave space for a national feature on the note (partly to allow the UK to have a representation of the Queen) but this was abandoned in 1998 for security problems and technical difficulties.[39] The decision of the ECB not to include national feature reflected the

[39]This section is primarily inspired by the detail account of this process from Calligaro (2013).

fact that the technical aspects of the creation of notes for the common currency trumped the political considerations of the nation states. Symmetrically the ECB was also independent from the Commission and the design of the notes was not driven either by an agenda to foster European identity using the euro iconography. The final choice of the ECB was to adopt architectural design typical of the European culture but such that "identification with a given country or region of Europe is avoided".The design from Robert Kalina, representing abstract pieces of architectures typical of European history was the one selected.[40] As a consequence of this process and avoidance of "national bias" at all cost, the iconography of the banknotes do not use symbols typically used on currencies to foster pride in a common social identity (figures of famous historical figures or existing renowned monuments).

The handing of the design of euro coins to member states led to a markedly different choice of iconography. While mint directors of the EU member states initially suggested a small indication of the national origin of the coin, member states did not accept a simple technical identification. Many of them wanted for the obverse side of the coin to bear national designs. This desire was either to make the new currency more acceptable to the population and/or to be able to pursue national iconographic traditions (eg the representation of monarchs on coins in some countries). The European Commission instead favoured a design identical in all countries. The final compromise was to enclose national symbols in the circle of 12 stars of the European flag on the obverse side. Contrary to the national neutrality of banknotes, the coin design opted for countries specific symbols to be represented on each of them.

C Diffusion of Foreign Euro Coins in France – Financial crisis robustness check: excluding all observations after 2007.

[40]Kalina achieved these architectural representations by generating by computer images melding existing monuments and architectural features, making an identification to an existing building difficult while giving it identifiable "European" traits.

	(1) Continuous	(2) Any EU	(3) EU first	(4) EU only
Proportion of foreign coins at regional level	0.36	0.22	0.08	0.06
	(0.50)	(0.29)	(0.14)	(0.09)
Time fixed-effects	Yes	Yes	Yes	Yes
Region fixed-effects	Yes	Yes	Yes	Yes
Observations	147	147	147	147
R^2	0.996	0.985	0.849	0.708

Table 9: Great Financial Crisis robustness check: excluding years after 2007. OLS regression with French region level data. Each column estimates the same model with a different coding of the dependent variable: Continuous (variable is coded from 1 to 4, 4 being European only); Any European: binary variable, respondent declare a European identity; European first: binary variable, European identity rank before nationality; European only: binary variable, European identity and no declared national identity. Bootstrapped standard errors clustered at the regional-level are given in brackets below. *, ** and *** indicate $p < 0.05$, $p < 0.01$ and $p < 0.001$ respectively.

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