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Euro area imbalances: A matter of culture?

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Abstract

In this paper we address the question of whether countries' cultural differences have contributed to the build-up of imbalances within the euro area. We analyse the link between a stylised index of economic sustainability within a monetary union (a combination of inflation, government budget deficit and current account) and various measures of culture, obtained from the World and European Values Surveys for 65 advanced and emerging countries. For the whole set of countries, we find a strong and causal link running from culture to sustainability. Therefore, imbalances may at least partly reflect underlying heterogeneity in values, beliefs, and preferences. However, we find no evidence that the nexus in euro area countries is different from the rest of the sample, suggesting that Economic and Monetary Union has not imposed a straightjacket on the transmission mechanism of national cultural traits on the sustainability of economic policies. We conclude by emphasising that culture is not destiny and that good policies - both at national and European level - are paramount to reduce imbalances in the euro area and elsewhere.

Keywords: Imbalances, sustainability, culture, economic policy.
JEL: F33, F42, Z1

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"The eurozone is confronted with a crisis of not just labour costs and prices – but culture. [...] There remains the question of whether most, or all, of the south would ever voluntarily adopt northern prudence. The future of the euro beyond a select group of northern countries with a similar culture will depend on the ability of all eurozone nations to follow suit." Alan Greenspan (Financial Times, 6 October 2011)

1 Introduction

It has frequently been claimed in the public debate that cultural traits may at least partly be responsible for the substantial fiscal and macroeconomic imbalances that contributed to the current sovereign debt crises in the euro area. While some have cautioned against attaching too much weight to this line of reasoning (Maseland 2011), others consider the cultural differences in the euro area irreconcilable with the notion of having a single currency (Evans-Pritchard 2012). According to the latter view, the euro area's "core" countries exhibit a culture of stability and prudence, which stands in stark contrast to the values and preferences prevailing in the "periphery". Since culture is deeply intertwined with a country's history, geography, and religion,[1] and cannot be expected to change overnight, it may pose a challenge to the very existence of the common currency.

Starting in the run-up to Economic and Monetary Union (EMU), nominal interest rates in the periphery decreased markedly. The resulting capital flows from the core to the periphery led to excessive credit and borrowing in the periphery fuelling domestic demand and inflationary pressures. This accumulation of net financial liabilities went hand in hand with an increase in current account deficits, and competitiveness losses manifested themselves in increasing unit labour costs and losses in export shares (*Figure 1*). At the same time, public deficits rose. The opposite happened in the supposedly more prudent core countries that financed consumption in the periphery. With relatively high national saving rates, domestic demand remained subdued and price pressures contained. Gains in competitiveness, often achieved through a high degree of wage moderation, were reflected in current account surpluses. With hindsight, it is clear that these financial, macroeconomic and fiscal imbalances were not sustainable.

[1] For a discussion of these determinants see for example Diamond 1997 (geography), Putnam 1993, Saroglou et al. 2004, Barro and McCleary 2006 (religion), Tabellini 2010 (distant institutions).

(Figure 1 here)

Are these imbalances due to cultural differences between the core and the periphery? Greenspan (2011) observes that *"euro-north has historically been characterised by high saving rates and low inflation, the metrics of a culture that emphasises longer-term investments rather than immediate consumption. In contrast, negative saving rates – excess consumption – have been a common feature of Greece and Portugal since 2003."* In a similar vein, Soros (2012) compares the euro to a *"Procrustean bed"*, alluding to the infamous Greek mythological figure who cut off people's legs or stretched them in order to make them fit the size of his iron bed. The analogy to the euro area is clear: The single currency is claimed to have imposed economic policies disjoint from countries' underlying values and preferences.

Such argumentation suggests that certain cultural traits tend to be linked with certain economic outcomes. This idea is not new. As early as 1905, Max Weber postulated a causal effect of religion on the development of capital which has been revisited frequently ever since (e.g. Barro and McCleary 2003, Becker and Woessmann 2009). In the second half of the twentieth century the link between culture and economic outcomes was primarily investigated by non-economists (e.g. Banfield 1958, Fukuyama 1995, Landes 1998). This changed by the late 1990s when improvements in economic techniques and data availability, particularly of globally conducted and standardised surveys (World Values Survey, European Values Survey), allowed for the incorporation of cultural dimensions in economic models. Guiso et al. (2006, 2010) affirm that culture indeed affects economic outcomes. Likewise, Tabellini (2007, 2008a, 2010) analyses the impact of culture on economic development, with culture being the main channel through which distant history impacts on institutional and economic outcomes. The biggest challenge in such empirical analysis is to isolate the impact of culture from those of other factors and to address the issue of reserve causality since *"all work on culture and economics faces the problem that causality is likely to go both ways – from culture to economics and from economics to culture"* (Guiso et al. 2006; cf. Glaeser et al. 2002, Inglehart and Baker, 2000).

If culture indeed matters for economic outcomes, the cultural differences across euro area countries should also be relevant for the likelihood of economic convergence and, ultimately, the sustainability of the currency area – given that cultural convergence in the euro area is unlikely to occur in the short or even medium term. So far, the exchange of

arguments has merely been of qualitative nature. This paper attempts to provide some first quantitative evidence, providing an empirical analysis of the impact of socio-cultural variables on economic policies as they matter for EMU, i.e. on the sustainability of economic policies.[2] Sustainability is measured by an index comprising the public deficit, inflation, and the current account. These are the most prominent economic indicators in the public debate on intra-euro area imbalances - a natural place to start with. Drawing on data from the World and European Values Survey, we look at the cross-country differences in those personal preferences and attitudes that may help explaining cross-country differences in economic sustainability. We attempt to address three questions. First, do cultural differences exist within the euro area, and how significant are they compared with the rest of the world? Second, do countries' cultural traits affect the sustainability of their economic policies? Third, if this is the case, does euro area membership mitigate this effect by "imposing" institutions that are at odds with the country's cultural preferences (the "Procrustean bed" view)?

We proceed in three main steps. First, having identified seven distinct cultural traits that we deem particularly relevant in the context of assessing sustainability (competition affinity, obedience, control over one's life, trust in others, work ethic, importance attached to thrift, honesty), we document differences in these traits globally and across the euro area core and periphery using decade-level data from the World Values Survey (WVS) and the European Values Study (EVS) starting in 1980. Given the limited availability of data and the fact that cultural values are very persistent, we use *decade-level* data in our study (i.e. one observation for the 1980s, one observation for the 1990s, and one for the 2000s). In the second step, we analyse to what extent these national cultural traits affect economic sustainability. We do so by regressing our sustainability index on the cultural variables using both OLS and instrumental variables (IV) estimation. Finally, we interact the cultural variables with a euro area dummy to see whether euro area membership attenuated or amplified the effect of culture (for better or for worse) on the sustainability of economic policies.

The two key results of the paper are as follows. First, for the entire country sample we find strong and robust evidence of a causal link running from cultural values to economic

[2]In this paper, we use *sustainability* as the opposite of imbalances, i.e. an economic condition which does not need major adjustment sooner or later. We do not use the term in its broader meaning of, for example, environmental sustainability.

sustainability. This suggests that "culture matters" also in this domain. Second, we find no evidence that the euro (or belonging to the euro area core or periphery) has had any impact on the link between cultural values and sustainability. The euro is neither a "Procrustean bed", nor a silver bullet to eliminate the correlation between national cultural values and imbalances.

The paper is organised as follows. Section 2 reviews the literature on the theoretical and empirical effects of culture on economic outcomes and possible transmission channels. Section 3 describes the data and provides some summary evidence. Section 4 presents our estimation strategy. Section 5 contains the results. Section 6 concludes.

2 Literature review

Much of the existing literature on culture in economics analyses the link between cross-country (or cross-region) differences in socio-cultural attitudes and economic outcomes (Fernández 2011). While it has been widely acknowledged that formal institutions matter in creating an environment conducive to entrepreneurship, economic exchange, and economic development (Hall and Jones 1999; North 2005; Acemoglu et al. 2002, 2005), informal institutions and constraints also have a role to play. For example, trust and respect between economic agents, sometimes referred to as *"civic capital"* (Guiso et al. 2010) or *"social capital"* (Knack and Keefer 1997), seem to matter for economic outcomes. Although much progress on this subject has been made in the last decade, Tabellini (2008a) notes that the *"theoretical literature is still in its infancy, and much more remains to be done, both at the core theoretical level (how to model cultural transmission and how to integrate values in a model of rational choice), and with regard to specific applications"*.

Various studies relate socio-cultural attitudes to economic growth, mostly using values survey data. Important work by Tabellini (2010) finds a causal effect of trust, respect, obedience and control on the economic development of regions in Europe. This finding contrasts with Beugelsdijk and Schaik (2001) who fail at establishing an empirical link between trust and economic growth at regional level in Europe. Knack and Keefer (1997) analyse the relationship between indicators of social capital and economic growth and investment rates. They detect a sizeable causal impact of the former on the latter. Zak and Knack (2001) develop a general equilibrium growth model that describes a principal-

agent structure to show that trust, and the institutional and social elements that affect it, significantly influences income growth rates. Algan and Cahuc (2010) focus on the impact of US immigrants' descendants' inherited trust on economic growth, illustrating that inherited trust impacts on worldwide growth in the twentieth century. Many of these studies use trust in other people, such as family or fellow citizens, as key cultural variable because the significance of trust for economic interactions has been discussed widely in the literature (Fehr 2009, Fukuyama 1995, Tabellini 2008b, La Porta et al. 1997). To differentiate the effects of culture on economic outcomes from those of the economic and institutional environment, almost all recent work relies on instrumental variables techniques that will be discussed in greater detail in section 4.

Cultural attitudes have also been shown to be correlated with economic outcomes other than growth. For example, in countries that have more traditional views of women's role in society, e.g. where being a housewife is considered as fulfilling as a paid job, female labour force participation is lower than elsewhere (Fernández, 2007). Higher trust in the population of another country is shown to result in higher trade with that country, more portfolio investment and more direct investment (Guiso et al. 2009). Of direct relevance to our work is analysis by Heinemann et al. (2011). Their notion of "stability culture", proxied by past inflation rates, governments' preferences and stability, and interpersonal trust, comes close to what we are trying to measure with the cultural variables in our model. The paper examines whether fiscal rules are genuinely effective in reducing sovereigns' borrowing costs or whether they rather mirror cultural preferences. The authors find evidence for the latter.

New institutional economics (North 1990, 2005) offers a possible theoretical explanation of why cultural persistence in the euro area may make it difficult for countries to fundamentally adapt their economic policies in the short term: *"Formal rules change, but the informal constraints do not"* (North, 1990). That is, cultural attitudes restrain the effectiveness of institutional evolution. If an institution or rule does not reflect the population's underlying preferences, it is unlikely to work efficiently because enforcement costs will be high (North, 1992). In the context of EMU, this would imply that although economic institutions have been adjusted in the run-up to EMU (Dyson 2002, Enderlein 2006) and continue being adjusted to cope with current challenges (e.g. European Commission 2012), such institutional change would not necessarily have the desired impact

because cultural differences impose an ultimate source of constraints (Williamson 2000).

3 Data

3.1 Economic sustainability

In contrast to much of the existing literature on culture and economics, we do *not* aim at explaining economic growth or development. Rather, we are interested in a stylised measure of the sustainability of economic policies within a monetary union. For this purpose, we construct a "sustainability index", *Sustainability* based on decade-level data between 1980 and 2010 for 65 countries (see *Table 1* for the full list of countries; a description of all data and sources can be found in *Table 2*). The index is a simple average of three indicators: government net lending in percentage of GDP, the inflation rate (with a minus sign) and the current account of the balance of payments in percentage of GDP. Each component is divided by its standard deviation to account for the different variability of these indicators. The higher a country's sustainability index, the more likely it is to perform well in a currency union and the lower its potential to contribute to harmful imbalances. Higher inflation and a worsening of the current account, particularly a large current account deficit, may indicate a loss of competitiveness that may contribute to the emergence of imbalances. We consider three variants of our sustainability index, (i) including inflation in absolute values, based on the recognition that the benefits of low inflation disappear when inflation turns negative (deflation); *Sustainability*1), (ii) including the current account balance in absolute terms, since very high current account *surpluses* may also signal the existence of imbalances; *Sustainability*2) and (iii) removing the current account balance altogether (*Sustainability*3), leaving only the variables on which governments may have more direct influence (the government balance and inflation).

(Tables 1-2 here)

We recognise that the indicators chosen are debateable; alternative measures can certainly be constructed (cf. Zuleeg 2010). Yet, when ranking the euro area countries according to *Sustainability* in the past decase, the countries that are currently under an EU/IMF adjustment programme appear at the bottom, as one would expect, while the euro area core countries, Switzerland and the Scandinavian countries display a much

better performance (*Figure 2*). Our index thus seems to be a reasonably good measure of good "euro area citizenship" or more generally of a balanced economy. In *Table 3*, we report the correlation matrix between *Sustainability* (and its variants) and its various components. Predictably, the componantes are strongly correlated with each other (by construction, the correlation is negative for inflation). *Table 4* presents a ranking for *Sustainability* for advanced countries.

(Tables 3-4 and Figure 2-3 here)

3.2 Measuring culture

For our purposes, "culture" refers to those cultural traits, i.e. people's preferences, values and beliefs, that are considered relevant in influencing economic policies, either directly or indirectly through better functioning institutions. In particular, we look at seven cultural traits that have been analysed in the literature: (i) competition affinity, (ii) obedience, (iii) control over one's life, (iv) trust, (v) work ethic, (vi) importance attached to thrift and (vii) honesty/civic capital. Out of these variables, trust has fared most prominently in the literature (e.g. LaPorta et al 1997, Knack and Keefer 1997). Tabellini (2010) works with trust, respect, obedience, and control and finds that the former two move along a common "social capital" dimension whereas the latter two can be grouped as indicators of "confidence in the individual". Guiso et al. (2010) focus on what they call *"civic capital"* – defined as *"those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities"*. They measure *"civic capital"* using survey questions that enquire about people's opinions on free-riding, cheating, or lying; it is equivalent to what we define as honesty. Lastly, Phelps (2006) stresses the importance of entrepreneurial spirit, willingness to work hard, and acceptance of a free market economy for the economic well-being of a country.

With the exception of obedience, all traits are expected to have a positive impact on our policy sustainability index as explained in greater detail below. Taken together, the cultural variables could come close to describing what has been termed *"stability culture"* (Underhill, 2002).

To measure cultural traits, we make use of data from the World Values Survey and the European Values Study. These are large, harmonised surveys that are well established in

the literature (Inglehart 2000). There are obvious drawbacks to working with values surveys. For instance, the simple aggregation of information about individual preferences to understand the culture of the nation as a whole can be problematic. Moreover, potentially significant within-country cultural differences are not considered.[3] Since the surveys are conducted in waves of five (WVS) and nine (EVS) years only, we aggregate the data to *decade-level* using the average of the available yearly data. We thus have three observations for each country, one for the 1980s, one for the 1990s and one for the 2000s. Details on the construction of the cultural variables can be found in *Table 5*.

(Insert Table 5 here)

Competition affinity. This variable measures the extent to which individuals from different countries appreciate competition in general. A population with positive attitudes towards competition should be more likely to favour competition in product and labour markets and therefore support structural reforms in these markets. Phelps (2006), for example, uses acceptance of competition as one of various cultural variables to explain employment, labour participation rates and labour productivity. We measure acceptance of competition by taking the first principal component of the replies to the WVS questions *'how would you place your view on a scale from 1 to 10'*, ranging from *'competition is good'* to *'competition is harmful'*, and *'people can only get rich at the expense of others'* versus *'wealth can grow so there is enough for everyone'*.

Obedience. The impact of obedience on performance and productivity at work can be expected to work in two directions. On the one hand, a certain willingness to follow orders is a necessary pre-condition to ensure the implementation of decisions taken and a smooth collaboration in any working environment. This leads Phelps (2006) to assume a positive impact of obedience on labour productivity. On the other hand, Tabellini (2010) observes that *"coercive cultural environments stifle individual initiatives and cooperation within a group"*. One would hence expect a hump-shaped relationship between obedience and the sustainability of economic policies. The positive impact of obedience vanishes when excessive obedience leads to the implementation of decisions that are considered wrong or inefficient. We measure this trait by using the survey question *'which quality*

[3]For a discussion of the problems related to the use of values survey data to proxy for societal preferences, see Beugelsdijk and Maseland (2011).

do you consider to be especially important to teach your children?' and take the first principal component of the percentage of mentions of *'obedience'* and *'independence'* (the latter enters with a negative sign) as well as the percentage of people who agree to follow instructions of one's superiors even when one does not fully agree with them.

Control. The cultural trait control over one's life refers to individuals' conviction that their life is primarily controlled by themselves rather than by exogenous factors. This is similar to the conviction *"that individual effort is likely to pay off"* (Tabellini 2010). Individuals that are *"highly motivated to succeed and view economic success as related to their deliberate choices [...] are more likely to work hard, to invest for the future and to innovate and undertake new economic initiatives"* (ibid.). At the same time, the belief in control over one's life should also be reflected in voters' preferences and could impact on government choices and public policies. For example, it has been shown by Alesina and Angelotos (2005) that the size of the share of the population who believes that luck determines income is positively related with that country's spending on social welfare. To measure this trait, we make use of the question *'how much freedom of choice and control you feel you have over the way your life turns out?'*.

Trust. As mentioned in section 2, interpersonal trust is the cultural variable discussed most extensively in the economic literature. This is due to the fact that *"virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time"* (Arrow 1972). However, trust cannot only be expected to reduce contract costs and control costs in transactions between individual economic agents but also to mitigate collective action problems at the national level (Beugelsdijk and Maseland 2011). Voters in a society of trust are more likely to accept compromises and strategies with long-term horizon since they trust in the good motives of their fellow citizens and governments (Tabellini 2007). Alesina and Drazen (1991) argue that high levels of public debt can be considered the result of a coordination failure between different socio-economic groups. Moreover, trust between citizens decreases tax evasion (Feld and Frey 2002), increases the acceptance of structural reforms (Heinemann and Tanz 2008) and decreases activities in the informal sector (D'Hernoncourt and Méon 2008). Hence, it is likely that trust will also impact positively on our policy sustainability index. We measure trust using the replies to the WVS question whether *'most people can be trusted'* or whether one needs to be very careful in dealing with people.

Work ethic. This cultural trait is meant to capture individuals' intrinsic motivation to work and the importance of work in their life (Phelps 2006). In cultures where work is central in individuals' lives and where individuals tend to define themselves primarily via their work can be expected to be more motivated, hardworking, and productive. To measure this trait we take the first principal component of (i) the percentage of respondents who mention *'hard work'* when asked which quality they consider to be especially important to teach their children and (ii) indications given regarding the importance of work in respondents' lives.

Propensity to save. It is fair to assume that individuals who consider thrift a virtue display higher saving rates and are more debt averse. The degree of importance attached to thrift would thus impact on individual savings decisions, and consequently affect overall private saving. Indeed, Guiso et al. (2006) empirically confirm the positive impact of thrift on national savings rates, although their results are less clear when they use instruments rather than standard OLS. Through the savings channel, importance attached to thrift can be expected to impact on a country's current account balance. It may also affect the level of public debt, if voters' preferences are reflected by the incumbent government. We measure this trait using the survey question *'which quality do you consider to be especially important to teach your children?'* and take the percentage of mentions of *'thrift, saving money and things'*.

Honesty. This variable measures the extent to to which individuals try to increase their own benefits irrespective of potentially negative social externalities of their actions (cf. Guiso et al. 2010). In countries where civic capital is underdeveloped, tax evasion, for instance, is likely to be higher, as are corruption and fraud. The resulting higher costs for transactions and enforcement lead to inefficiencies in the economy and are likely to impact negatively on our sustainability index. We measure honesty/civic capital using the first principal component of the replies to the question *'is it justifiable to cheat on taxes / avoid fare on public transport / fail to report damage you have done accidentally to a parked vehicle?'*. The danger of biased replies is obviously high for this question since individuals may be reluctant to answer it in honesty.

Overall culture. To obtain a summary measure of culture, we take the first principal component of all our seven cultural variables and analyse its properties. We find that this variable is positively correlated with all cultural values (in particular work ethic and

trust) apart from obedience, where the correlation is strongly negative. Given these characteristics, one is tempted to conclude that our summary measure of culture is an indicator of the "spirit of capitalism" or the cultural value of the bourgeoisie in the meaning of the classic analysis of Max Weber (1905).[4] In *Table 6*, we report summary statistics for this variable, while the correlation matrix between the different culture traits is shown in *Table 7*. *Figure 4* presents charts of culture plotted against the components of the sustainability index for the 11 initial euro area countries and Greece.

(Tables 6-7 and Figure 4 here)

4 Empirical approach

To test the hypothesis whether culture indeed matters for sustainability we estimate the following equation,

$$Sustainability_{it} = \beta Culture_{it} + \gamma EuroArea_{it} + \delta Culture_{it} * EuroArea_{it} + \theta Controls_{it} \quad (1)$$

where i is the country, t is time (decade), $Culture$ is a vector of the cultural variables of interest, and Euro Area is a dummy taking the value 1 if a country is in the euro area. Since a lot of the variation is across countries we do not include fixed effects in the regression, while we include time dummies in some specifications. The euro area "core" countries include Austria, Belgium, Finland, France, Germany, Luxembourg and the Netherlands, while the euro area "periphery" covers Greece, Ireland, Italy, Portugal and Spain.We do not estimate equation (1) directly but expand it gradually, and start from a simpler bivariate regression of $Sustainability$ on $Culture$. We mostly use pooled OLS in our estimation but also consider instrumental variables to understand whether our results are causal or whether a simultaneity bias is driving them. As noted above, correcting for the endogeneity bias is an important feature in the literature investigating the nexus between culture and economic performance.

[4]In fact, we do find that this overall measure of culture is strongly associated with the share of protestants in a country.

4.1 Controls

In our robustness analysis we include a number of controls, in particular income and quality of institutions. Further controls include geography (latitude of the capital in each country), the age dependency ratio, financial openness (as measured by the Chinn-Ito index), a communist past dummy, and the oil trade balance to GDP ratio.

Institutional Quality. Apart from a direct effect, culture can have indirect effects on the sustainability of economic policies via a number of variables, particularly the quality of institutions. It is therefore crucial to include institutional quality as control to account for this mitigating effect of institutions on culture. We use the International Country Risk Guide (ICRG) indicator of Quality of Government as proxy for institutional quality, which is common practice in the literature (cf. Knack and Keefer 1997). The ICRG indicator covers (i) corruption, (ii) law & order, and (iii) bureaucratic quality.[5] While we remain agnostic regarding the cultural conditions that shaped those institutions in the first place and vice versa (Tabellini 2010 sheds some light on the topic), the coefficient of culture we eventually obtain picks up the cross-country- and time variation which is purely due to cultural differences. Since institutional quality is likely to suffer from endogeneity, it will be instrumented as well. Comparing the regression results with and without controlling for institutions we can then assess to which extent institutional quality intermediates the transmission of culture on economic sustainability.

Income. Real per capita GDP is highly correlated with sustainability of economic policies as well as culture due to a self-reinforcing mechanism (cf. Knack 2000). If high levels of civic capital are conducive to economic growth as postulated in the literature (e.g. Guiso et al. 2006, Guiso et al. 2010), the resulting higher level of income serves as a reward mechanism to upholding and strengthening cultural values like trust and honesty.

Geography. A much discussed issue in economics and other social sciences pertains to the effect of geography and climate on economic outcomes and long term development (Diamond 1997, Acemoglu et al. 2002). If such an effect indeed exists, it may also affect cultural traits like work ethic, for instance. We therefore include distance to equator, or latitude, of the capital of each country as a control in the sensitivity analysis (cf. Hall and Jones 1996).

[5] The ICRG indicator is highly correlated with the Worldbank Worldwide Governance Indicators which are also widely used but not as encompassing in terms of data availability.

Old age-dependency ratio. An adverse composition of the age structure might put a strain on government expenditures. To not falsely attribute such potential negative effects on the fiscal balance to culture, we control for the underlying demographics. Including an old age-dependency ratio has the additional advantage of simultaneously controlling for the fact that culture may also be associated with the age structure, since a higher average age of the respondents can lead to more conservative answers.

Communist Past. We include a dummy for countries with a communist past to account for the additional challenges those countries had to cope with in maintaining sustainable economic policies, particularly in the first two decades of our sample. Otherwise, this effect could confound the coefficient of culture since culture itself is impacted by having a history of communism.

Oil trade balance. Oil exporters are more likely to have large fiscal and current account surpluses even in the absence of sustainable economic policies due to the revenues from oil exports. This conjecture is confimed by a look at the overall country ranking in the sustainability index which lists a number of Northern African and Middle Eastern countries near the top of the index. Considering that oil trade balance is not necessarily independent of culture due to oil exporting countries' strong regional concentration and islamic influence, its inclusion is advisable.

Financial Openness. Financial openness, as measured for example by the Chinn-Ito index of capital account openness (Chinn and Ito 2006), may both be associated with cultural traits such as the acceptance of competition and open-mindedness towards strangers and certain components of the sustainability index, foremost the current account balance which i.a. becomes more susceptible to large up- and downswings of financial flows.

4.2 Instruments

One key issue that needs to be addressed in the analysis of interlinkages between culture, institutions, and economic outcomes is the direction of causation and the associated possible endogeneity of the regressors.

To estimate the genuine effect of culture on sustainability it is therefore appropriate to employ instrumental variables that are optimally exogenous, i.e. uncorrelated with the error term, strong, i.e. correlated with the potentially endogenous variables of interest

(culture and institutional quality), and not part of the original regression. A number of promising variables have been proposed in the literature which we use in our robustness analysis.

Derived from the WVS question on *'how important is religion in your life?'* we take *religiosity* as instrumental variable (IV) considering that it is a variable highly correlated with cultural traits but not susceptible to short term change and reverse feedback mechanisms from economic sustainability (cf. Knack 2000). In a similar vein, we employ the *share of protestants* (again obtained from the WVS).

A third instrument is obtained from La Porta et al. (1999) who show that the quality of contemporaneous institutions can be traced back to historical legal traditions. Using their "*legal origin*" classification (see Appendix) we argue along the lines of Tabellini (2010) that while institutions of the distant past strongly influence (highly persistent) cultural traits, they should not matter for current outcomes of sustainability *in view of largely harmonized legal systems, particularly in the euro area, and* after controlling for income, the present quality of institutions*, and education.*

Another possible IV provided by Alesina et al. (2003) is *ethnic fractionalization*, defined as "the probability that two randomly selected people from a given country will not belong to the same ethnolinguistic group." The reasoning for the inclusion of this variable is that greater fractionalization is associated with greater potential for conflict and thus potentially inimical to the formation of civic capital.[6] At the same time, ethnic fractionalization per se should not have any detrimental effects on sustainability or economic outcomes.

Lastly, we choose to instrument culture with *latitude* of the capital city as the arguably most exogenous variable there is. However, latitude is not likely to fulfil the third IV criteria since climate or geography might be a powerful explanatory by itself (which is why we alternatively include it as a control in our sensitivity analysis).

Using the Hansen J-Test for overidentifying restrictions and the Kleibergen-Paap test for underidentification, the econometric validity of our instruments is confirmed.[7]

[6] Before the release of the Alesina et al. (2003) data, Knack and Keefer (1997) applied the percentage of the largest ethnolinguistic group as an IV for trust.

[7] Apart from the instruments listed in Section 4.2, we also tried income per capita in the early 1800s, population density in the 1500s, and the length of coastline as a share of country size; none of which having as strong an association with culture as the included ones.

5 Results

The first question that we address is whether the cultural traits and the overall culture indicator display a great variation within the euro area from the point of view of their variation at the international level. This is shown in *Table 8*, where we regress the *Sustainability* index on a dummy variable for the countries of the euro area "core" (Austria, Belgium, Finland, France, Germany, Luxembourg, and the Netherlands) and "periphery" (Greece, Ireland, Italy, Portugal and Spain). *Table 8* shows that the euro area core countries have a higher reading for all cultural values apart from obedience (not surprisingly since this variable is negatively correlated with the other values). Because the cultural values are standardised, the economic interpretation of the difference is straightforward: for example, for the overall culture variable the core countries are 24% of a standard deviation above the international average, while peripheral countries are about half standard deviation below. For most of these variables the difference with the international average is not statistically significant, indicating that intra euro area differences in cultural values, while present, are not very large by international standards.

(Table 8 here)

We then move to study the nexus between sustainability and culture by running OLS regressions on decade-level data in *Table 9*. Note that for the moment we are not addressing the question of causality but are just measuring an empirical association between sustainability and culture. In line with our expectations, we find that control, trust, work ethic and overall culture are positively and statistically significantly associated with a higher sustainability index, while obedience is negatively related. However, with the exception of trust, all regressions on the individual cultural variables display R^2's below or equal to 14.3%, suggesting that the variation in the sustainability index attributable to culture is limited. Adding interpretation, we find that one standard deviation increase in culture leads to about a third of a standard deviation improvement in sustainability, which is a large effect. For comparison, we run a similar regression for real GDP per capita, to see whether our results are broadly consistent with the existing literature on the nexus between culture and growth. We find that also in this case there is a positive, large and statistically significant association with culture.

(Table 9 here)

An interesting question which may arise at this point is whether results are driven by one of the three components of our index in particular. We therefore present, in *Table 10*, a robustness analysis where we regress the sustainability index and its three variants described in Section 3, as well as the individual components, on the overall measure of culture. The results are consistent across variables, in particular negative for inflation and positive for government net lending and for the current account.

(Table 10 here)

In *Table 11*, we test whether the association between sustainability and culture may be driven by an omitted variable. We first test, in column (2), whether omitting the time dummies makes any difference for the results, and given that it does not, we exclude them from now on, also in the interest of parsimony. In column (3), we restrict the sample to advanced countries. As can be seen the effect is not only maintained when looking at advanced countries only, but is even much larger. Including log income and the IRCG Quality of Government indicator leads to the former being statistically significant, but not the latter. This result suggests that culture has a direct effect on economic sustainability that is not intermediated by the quality of institutions, at least as measured by the IRCG indicator. We include additional control variables (shown in columns (4)-(9) of Table 11) but none of them is individually significant. The coefficient for culture remains positive and statistically significant across all specifications, albeit somewhat smaller in size when log income is included. At the same time, the range of the R^2's of the regressions is between 11.7% and 21.9% except for advanced countries where the link between culture and sustainability appears to be stronger. It is therefore important to note that while cultural values do seem to matter, they are only one of many factors influencing economic sustainability.

(Table 11 here)

As mentioned earlier, one major concern with our results ought to be the possibility of a simultaneity bias. This is typically well recognised in the literature on the growth-culture nexus, but should be less of a concern for our analysis, since it is harder to argue that imbalances may by themselves influence cultural variables rather than the other

way round. Nonetheless, in *Table 12* we use Instrumental Variables (IV) to sort out the question of causality. Using the set of instruments introduced in Section 4.2 (religion, the share of protestants, legal origin, ethnic fractionalization and - only in one case - latitude of the capital) we are able to estimate the link between sustainability and culture. The coefficient for culture is remarkably stable across the considered variants and there is no indication of an endogeneity bias. Note that this is true also when the ICRG indicator of Quality of Government and log real GDP (also instrumented) are included, suggesting that there is indeed a causal nexus running from culture to sustainability that is not captured by income and the quality of institutions.

(Table 12 here)

We finally move to the heart of the question addressed in our paper by measuring whether the relationship between culture and sustainability is any different in the euro area from the rest of the countries in our sample (*Table 13*). This is captured by the interaction terms between culture and whether a country has been in the euro area in the 2000s (we include the 11 original members and Greece), as well as whether a euro area country is in the core or the periphery. The key result is that there is no statistically significant difference between euro area countries and the other countries (including the euro area countries before the 2000s): the link between culture and sustainability is the same, and it is robust. *Table 14* reports the same analysis for inflation alone, which confirms the main results of Table 13, although we find that the monetary union has a beneficial effect on inflation by itself, since it leads to a lower inflation rate by about half of one standard deviation.

(Tables 13-14 here)

All in all, therefore, the main conclusion of our paper is that (i) there is a causal nexus between culture and sustainability (and hence imbalances) but that (ii) this nexus is not particularly strong (or weak) in the euro area. There are notable cultural differences between the euro area "core" and "peripheral" countries, although they are not particularly pronounced when seen from an international perspective. Still, the central message of this paper is that in addressing imbalances within the euro area it is necessary to be aware that some of them may arise from deeply rooted cultural differences. In order to give an

idea of the economic significance of our findings, *Figure 4* reports the three components of *Sustainability* against the principal component of cultural variables in the euro area for the period after 1999. We find that there is a noticeable relationship for all of them, but also considerable variation across countries from the regression line. This suggests that, while culture matters, its effects may be overcome by other factors including, importantly, policy interventions at the national and euro area level.

(Figure 4 here)

6 Conclusion

The main finding of our paper is that (i) there is a causal nexus between culture and sustainability but that (ii) this nexus is not stronger (or weaker) in the euro area than it is in the rest of the world. Within the euro area, cultural differences between the core and the periphery can indeed be detected. These differences seem to have provided a "cultural contribution" to the build-up of imbalances within the euro area. For better or for worse, EMU has not imposed a "Procrustean bed" on the link between cultural traits and economic policies in its member countries. Neither in the core nor in the periphery has the euro inflicted economic policies disjoint from countries' underlying values and preferences.

However, these results have to be interpreted with the necessary caution given the inevitable econometric difficulties when dealing with variables of strong mutual interdependence. Second, our findings should not be interpreted as a recommendation to alter values and preferences in euro area countries to induce a culture commensurate with good EMU citizenship. While such an attempt would neither be feasible nor desirable, policymakers should rather focus on setting surroundings that are conducive to enhanced trust, cooperation, acceptance of free market structures, honesty, and feelings of control over one's own life in the long run. These could, for example, comprise the creation of fair tax systems, labor market reforms that alleviate the insider-outsider problem, or the reduction of corruption and nepotism in the public sector. Above all, culture is not destiny and there is ample scope to compensate for the effects of cultural values on economic outcomes and imbalances. Increased efforts to move towards sound economic policies and the presence of strong and credible institutions in the EMU governance framework are key.

The structural reforms that are currently being implemented in many euro area countries are a first step in the right direction, as are the ongoing reforms of the euro area's fiscal and macroeconomic rules.

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Appendix

Table 1. List of Countries in alphabetical order

United States	Estonia	Iceland	Mexico
Japan	Slovenia	Turkey	Peru
Austria	Bulgaria	Russia	Venezuela
Belgium	Czech Republic	Ukraine	Taiwan
France	Latvia	Canada	Hong Kong
Germany	Hungary	Australia	India
Italy	Lithuania	New Zealand	Indonesia
Luxembourg	Croatia	South Africa	Korea
Netherlands	Bosnia-Herzegovina	Israel	Malaysia
Finland	Poland	Saudi Arabia	Pakistan
Greece	Serbia	Egypt	Philippines
Ireland	Romania	Algeria	Singapore
Malta	United Kingdom	Morocco	Thailand
Portugal	Denmark	Nigeria	China
Spain	Norway	Argentina	
Cyprus	Sweden	Brazil	
Slovakia	Switzerland	Chile	

Table 2. Description of Variables and Sources

Variable	Description	Source	Time
Sustainability Index			
Public Balance	Government balance per national definiton (in bn national	IMF WEO	1980-2011
Current Account Balance	Current account balance (in USD bn)	IMF WEO	1980-2011
Inflation	Growth rate of consumer price index	IMF WEO	1980-2011
Culture	see Table 4.		
Instruments			
Legal Origin	Identifies the legal origin of the Company Law or Commercial code of each country. There are five possible origins: (1) English Common Law (2) French Commercial Code (3) Socialist/Communist Laws (4) German Commercial Code (5) Scandinavian Commercial Code	LaPorta et al. (1999), Teorell et al. (2011)	-
Religion	Taken from the following WVS / EVS survey questions:		
	a) Do you belong to a religion or religious denomination? Share of respondents: Protestant	WVS (2009), EVS (2011)	1981-2008
	b) Independently of whether you attend religious services or not, would you say you are .. ? Share of respondents: a religious person	WVS (2009), EVS (2011)	1981-2008
Ethnic Fractionalization	Reflects probability that two randomly selected people from a given country will not belong to the same ethnolinguistic group. The higher the number, the more fractionalized the society. The definition of ethnicity involves a combination of racial and linguistic characteristics.	Alesina et al. (2003), Teorell et al. (2011)	1980-2001
Controls			
Institutional Quality	International Country Risk Guide (ICRG) indicator of quality of government. The mean value of the ICRG variables "Corruption", "Law and Order" and "Bureaucracy Quality", scaled 0-1. Higher values indicate higher quality of government.	PRS Group (2009), Teorell et al. (2011)	1984-2008
Income	Real GDP per capita	IMF WEO	1980-2011
Education	Average schooling years in the total population aged 25 and over (data available in five year intervals).	Barro and Lee (2010)	1960-2010
Old-age dependency	Old-age dependency ratio (Age 65+ / Age 20-64)	United Nations (2011)	1980-2011
Geography	Latitude of the capital (absolute value divided by 90 to standardize variable between 0 and 1)	Acemoglu et al. (2005)	-
Oil trade balance	Oil trade balance (in USD bn)	IMF WEO	1980-2011
Financial openness	The Chinn-Ito index measures a country's degree of capital account openness.	Chinn and Ito (2006) (data extending to 2010)	1980-2010
Post-communist country	Dummy that takes value 1 if country was communist before the fall of the Soviet Union and 1 if otherwise.	-	-
Other			
Unit Labour Cost	Benchmarked unit labour costs - Manufacturing / Index publication base (2005=100)	OECD MEI, Global Insight, National Source, IMF WEO	1980-2010

Table 3. Correlation Matrix: Sustainability Index and Components

	Sustain-ability	Sustain-ability1	Sustain-ability2	Sustain-ability3	Inflation	Gov't net lending	Current account
Sustainability	1						
Sustainability1	.96*	1					
Sustainability2	.55*	.61*	1				
Sustainability3	.89*	.82*	.70*	1			
Inflation	-.54*	-.42*	-.47*	-.71*	1		
Gov't net lending	.76*	.78*	.56*	.77*	-.09	1	
Current account	.77*	.78*	0.12	.39*	.15*	.45*	1

Table 4. Sustainability Index Country Ranking:
Advanced Economies (average 2000-2010)

Rank	Country	Index Value	Rank	Country	Index Value
1	Norway	3.14	18	New Zealand	0.11
2	Singapore	1.88	19	France	0.08
3	Switzerland	1.51	20	Australia	0.03
4	Hong Kong	1.50	21	Slovenia	-0.04
5	Luxembourg	1.46	22	Italy	-0.05
6	Sweden	1.14	23	United Kingdom	-0.13
7	Finland	1.13	24	Ireland	-0.17
8	Taiwan	0.93	25	Estonia	-0.21
9	Denmark	0.91	26	United States	-0.27
10	Netherlands	0.80	27	Spain	-0.32
11	Korea	0.70	28	Czech Republic	-0.32
12	Germany	0.60	29	Cyprus	-0.50
13	Canada	0.51	30	Malta	-0.58
14	Belgium	0.49	31	Portugal	-0.74
15	Austria	0.46	32	Iceland	-0.77
16	Israel	0.23	33	Slovakia	-0.79
17	Japan	0.21	34	Greece	-1.70

Note: Advanced Economies are identified according to IMF classification.

Table 5. Description of cultural variables and associated WVS / EVS survey questions

Variable	Survey Question	Asked since	Aggregation
Competition is good	Now I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. (Code one number for each issue): *(i) Competition is good. It stimulates people to work hard and develop new ideas vs. Competition is harmful. It brings out the worst in people.* *(ii) People can only get rich at the expense of others vs. Wealth can grow so there's enough for everyone.*	1990	Principal Component (PC) on mean of answers
Obedience	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five (out of 16). *(i) obedience (+)* *(ii) independence (-)*	1981	PC on percentage of mentions.
Control	Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means "none at all" and 10 means "a great deal" to indicate how much freedom of choice and control you feel you have over the way your life turns out.	1981	Average
Trust	Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? *Most people can be trusted vs. Can't be too careful*	1981	Average
Work ethic	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five (out of 16). *Hard work.* For each of the following aspects, indicate how important it is in your life. Would you say it is: *Very important*, Rather important, Not very important, Not at all important.	1981	PC on percentage of mentions.
Propensity to save (Thrift)	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five (out of 16). *Thrift, saving money and things.*	1981	Average
Honesty (Civic Capital)	Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between (Scale from 1 to 10, ranging from 'never' to 'always'). *(i) Cheating on taxes if you have a chance.* *(ii) Failing to report damage you've done accidentally to a parked vehicle* *(iii) Avoiding a fare on public transport*	1981 discontinued in 1990	Principal Component (PC) on mean of answers

Sources: WVS (2009), EVS (2011).

Table 6. Summary Statistics: Culture Overall

	Obs.	Mean	Standard deviation
Total	172	0	1
1980s	22	-0.51	0.77
1990s	53	0.26	1.01
2000s	97	-0.03	1

Table 7. Correlation Matrix: Cultural Variables

	Competition	Obedience	Control	Trust	Work ethic	Propensity to save	Honesty	Culture overall
Competition	1							
Obedience	-.03	1						
Control	.08	-.05	1					
Trust	-.14*	.49*	.18*	1				
Work ethic	.45*	-.47*	.09	.11	1			
Propensity to save	.17*	-.20*	-.27*	-.15*	.32*	1		
Honesty	.21*	-.15*	.20*	.26*	.09	-.06	1	
Culture overall	.35*	-.81*	.37*	.60*	.68*	.18*	.40*	1

Table 8.

Dependent variable: Sustainability Index

	(1) Competition is good	(2) Obedience	(3) Control	(4) Trust	(5) Work ethic	(6) Propensity to save	(7) Honesty	(8) Culture overall
Country of the euro area core	-0.57***	-0.36	0.01	0.47*	0.07	0.33	0.23	0.24
	(0.21)	(0.25)	(0.25)	(0.24)	(0.19)	(0.24)	(0.24)	(0.24)
Country of the euro area periphery	-0.75***	0.11	-0.36	-0.22	-0.23	-0.39	0.08	-0.48
Observations	175	175	172	175	175	175	175	172
R2	0.306	0.0175	0.00810	0.0962	0.443	0.0859	0.0849	0.0773

Note: Pooled OLS on decade-level data, including time dummies. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 9.

Dependent variable: Sustainability Index (unless otherwise indicated)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)*
Competition is good	-0.15								
	(0.09)								
Obedience		-0.21***							
		(0.08)							
Control			0.14						
			(0.08)						
Trust				0.41***					
				(0.07)					
Work ethic					0.32***				
					(0.09)				
Propensity to save						-0.10			
						(0.08)			
Honesty							0.11		
							(0.09)		
Culture overall								0.31***	0.43***
								(0.08)	(0.07)
Observations	126	126	123	126	126	126	126	123	140
R2	0.0805	0.112	0.0803	0.275	0.143	0.0719	0.0726	0.175	0.240

Note: Pooled OLS on decade-level data, including time dummies. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. (*) In equation (9) the dependent variable is log GDP per capita.

Table 10.

Dependent variable:	(1) Sustain-ability	(2) Sus1	(3) Sus2	(4) Sus3	(5) Inflation	(6) Government net lending	(7) Current account
Culture overall	0.31***	0.21***	0.13	0.35***	-0.40***	0.19**	0.15*
	(0.08)	(0.08)	(0.09)	(0.07)	(0.08)	(0.08)	(0.09)
Observations	123	123	123	123	139	123	140
R2	0.175	0.0792	0.0379	0.248	0.243	0.0774	0.0304

Note: Pooled OLS on decade-level data, including time dummies. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 11.

Dependent variable: Sustainability Index

	Including time dummies		Advanced countries only						
Culture overall	0.31***	0.31***	0.53***	0.19**	0.16*	0.24***	0.24***	0.19**	0.16*
	(0.08)	(0.08)	(0.10)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Log of real GDP per capita				0.28***	0.23***	0.29***	0.25***	0.23***	0.18**
				(0.10)	(0.08)	(0.08)	(0.08)	(0.07)	(0.08)
IRCG Quality of Government				-1.17*					
				(0.59)					
Latitude					-1.19**				
					(0.47)				
Age dependency ratio in 2000						-0.11***			
						(0.03)			
Chinn-Ito index of financial openness							-0.10**		
							(0.04)		
Dummy for Post-communist country								(0.01)	
Oil trade balance to GDP									0.08
									(0.07)
Observations	123	123	58	108	107	104	104	120	111
R2	0.175	0.117	0.352	0.144	0.164	0.219	0.183	0.191	0.164

Note: Pooled OLS on decade-level data, including time dummies. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 12.OLS vs IV estimates

Dependent variable: Sustainability Index

	(1) OLS	(2) IV	(3) IV	(4) IV
Culture overall	0.309***	0.219*	0.278	0.353**
	(0.077)	(0.133)	(0.186)	(0.170)
IRCG Quality of Government				-1.619*
				(0.956)
Log of real GDP per capita			-0.074	0.270*
			(0.161)	(0.140)
Observations	123	89	89	89
R-squared	0.117	0.084	0.051	0.112
J test (P value)	.	0.14	0.080	0.081
Kleibergen-Paap test for underidentification (P value)	.	3.2e-07	0.00024	0.000026

Note: Pooled OLS or IV as indicated in each column. The instruments are Religion, Legal Origin, Ethnic Fractionalization and the share of Protestants; in equation (4), also Latitude is included. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 13.Interaction with participation in the euro area

Dependent variable: Sustainability Index

	(1)	(2)	(3)
Culture overall	0.31***	0.28***	0.32***
	(0.09)	(0.08)	(0.08)
Euro area country	0.19		
	(0.18)		
Culture*Euro area country	0.06		
	(0.20)		
Euro area country - periphery		-0.41	
		(0.32)	
Culture*Euro area country - periphery		0.04	
		(0.44)	
Euro area country - core			0.58***
			(0.22)
Culture*Euro area country - core			-0.15
			(0.22)
Observations	123	123	123
R2	0.126	0.138	0.167

Note: Pooled OLS on decade-level data. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 14.

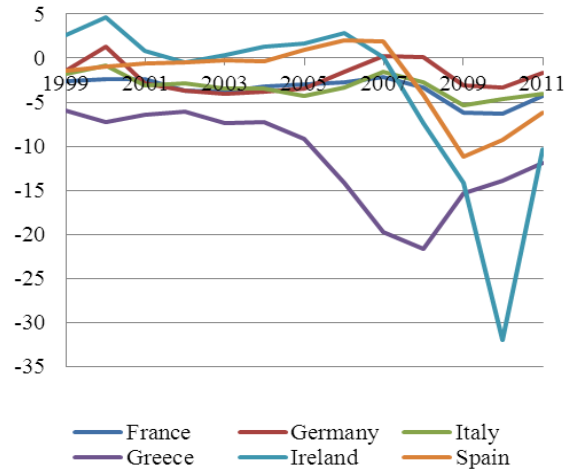
Dependent variable: Inflation

	(1)	(2)	(3)
Culture overall	-0.46***	-0.42***	-0.42***
	(0.08)	(0.08)	(0.08)
Euro area country	-0.70***		
	(0.18)		
Culture*Euro area country	0.32		
	(0.20)		
Euro area country - periphery		-0.50	
		(0.34)	
Culture*Euro area country - periphery		0.16	
		(0.49)	
Euro area country - core			-0.74***
			(0.22)
Culture*Euro area country - core			0.34
			(0.23)
Observations	139	139	139
R2	0.329	0.267	0.303

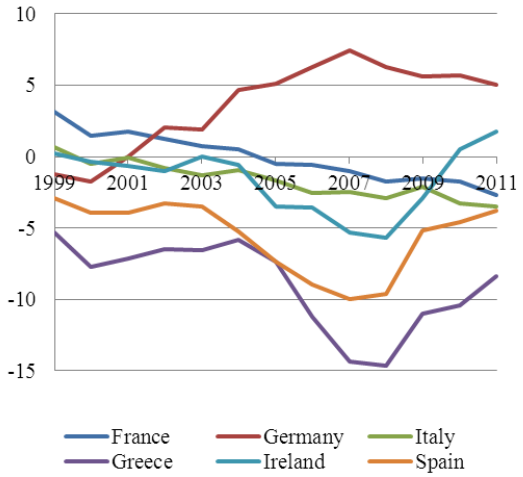
Note: Pooled OLS on decade-level data. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Figure 1. Indicators of sustainability in selected euro area countries

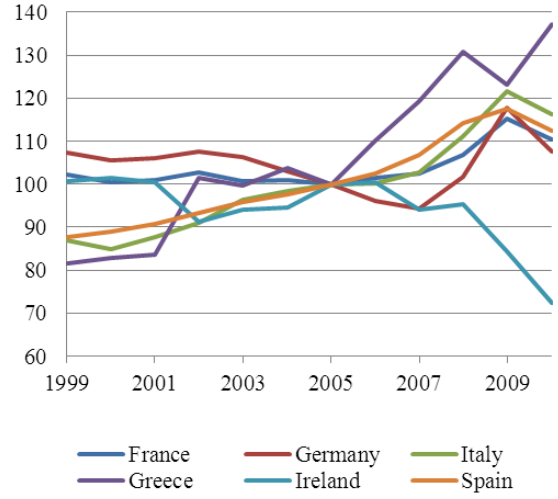
a) Public Balance (in % of GDP)



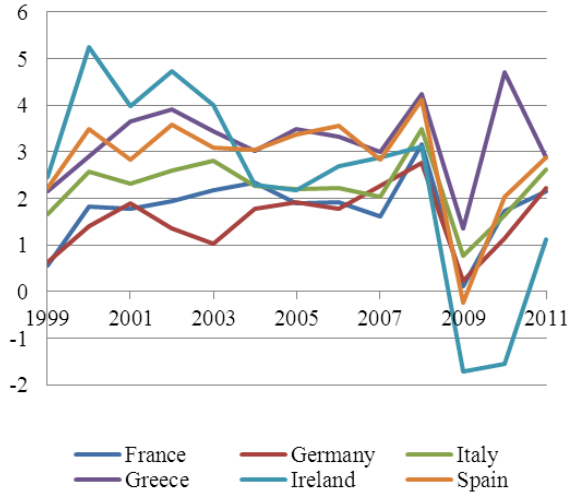
b) Current Account (in % of GDP)



c) Unit Labour Costs (Manufacturing), Index 2005=100

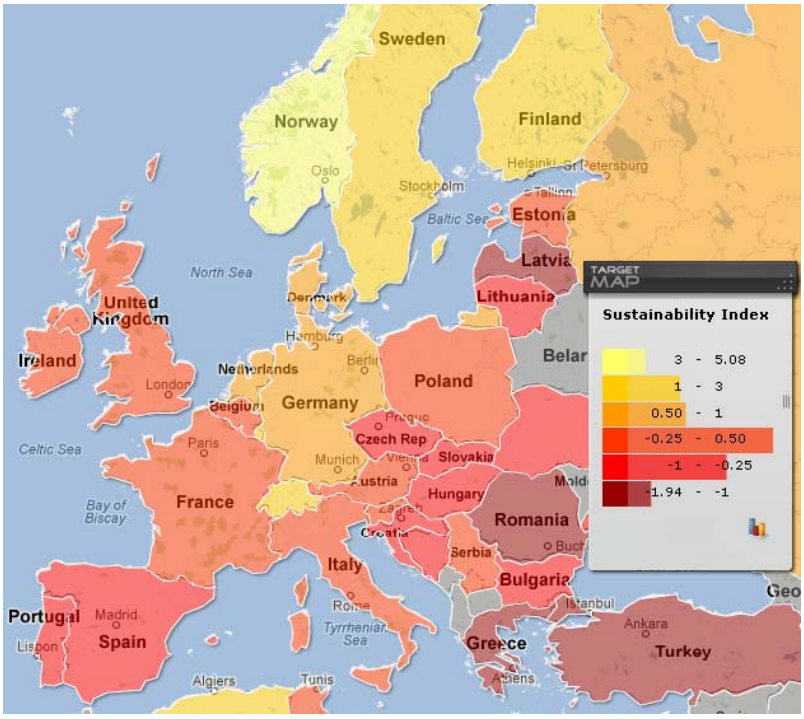


d) Inflation (in %)



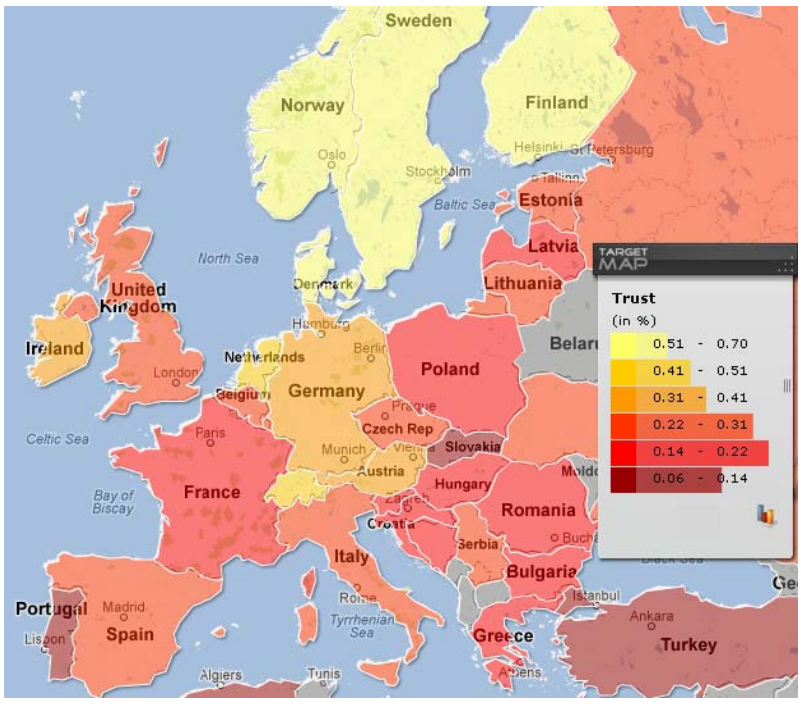
Source: IMF WEO, OECD MEI

Figure 2. Sustainability index, Europe



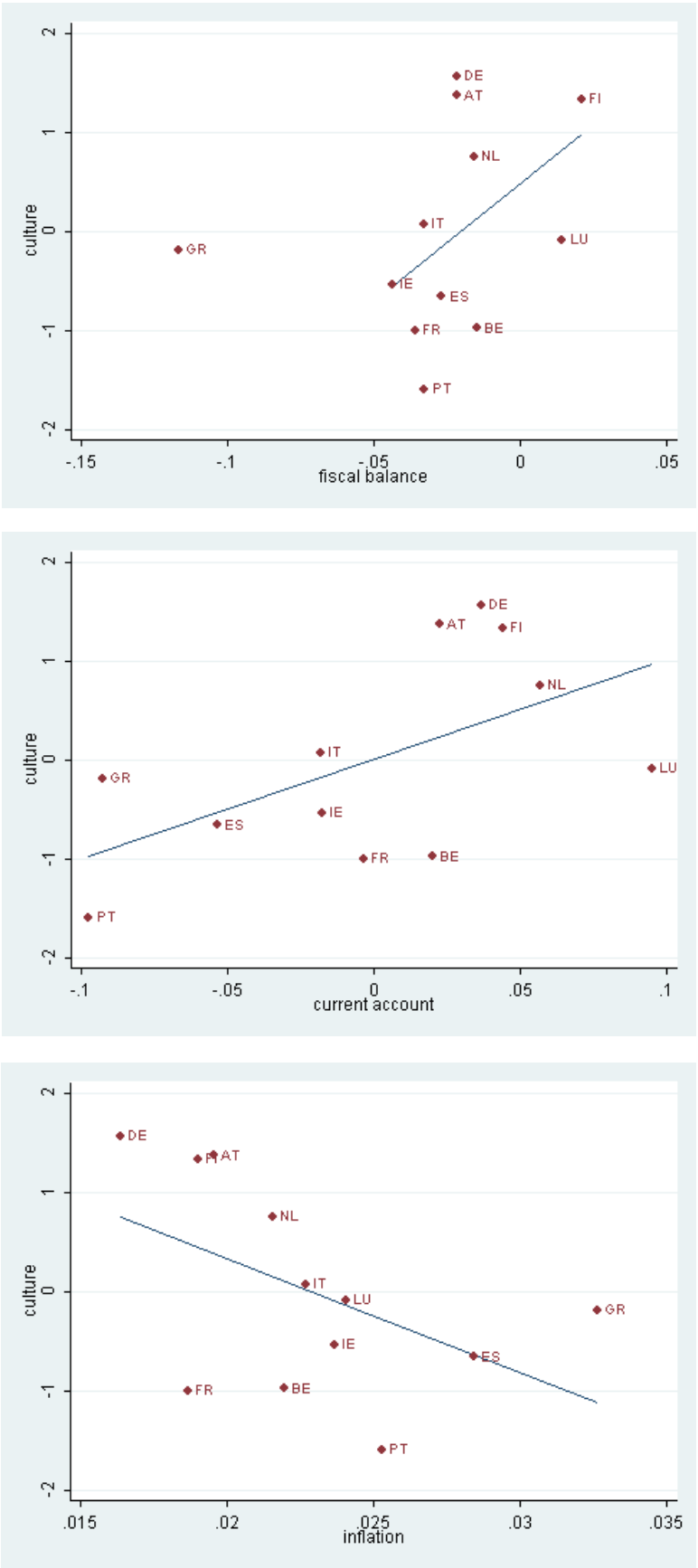
Source: EVS (2011), WVS (2009), Own calculations.
Note: Sustainability is measured using the index described in Section 3, averaged between 2000-2010.

Figure 3. Trust in Europe



Source: EVS (2011), WVS (2009)
Note: Trust is measured as the percentage of responses "Most people can be trusted" to the question "*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*", averaged between 2000-2010.

Figure 4. Culture vs. Sustainability Indicators: Means and Fitted Lines



Source: IMF WEO, OECD MEI, own calculations.
Note: The values represent averages between 2000-2010. The fitted line in the first chart (fiscal balance) excludes Greece.