A CULTURE BASED THEORY OF FISCAL UNION DESIRABILITY

LUIGI GUISO, HELIOS HERRERA, MASSIMO MORELLI

ABSTRACT. If voters of different countries adhere to different and deeply rooted cultural norms, the country leaders may find it impossible to agree on efficient policies especially in hard times. The conformity constraint -political leaders' unwillingness or impossibility to depart from these norms - has resulted in lack of timely intervention which has amplified an initially manageable debt crisis for some European countries to the point of threatening the Euro as a single currency. We show the conditions under which the introduction of a fiscal union can be obtained with consensus and be beneficial. Perhaps counter-intuitively, cultural diversity makes a fiscal union even more desirable. Some general lessons can also be drawn on the interaction of cultural evolution and institutional choice.

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Guiso: luigi.guiso@eief.it Einaudi Institute for Economic and Finance (EIEF);

Herrera: hhh2108@columbia.edu School of International and Public Affairs (SIPA), Columbia University;

Morelli: mm3331@columbia.edu Department of Political Science and Department of Economics, Columbia University. We thank Sasha Buetzer, Francesco Squintani, Livio Stracca and participants at the Workshop on Institutions, Individual behaviours and Economic Outcomes, Argentiera, Sardinia, the conference "Topic in Social Choice and Political Economics", Rome for helpful suggestions and comments.

1. Introduction

This paper looks at an understudied important source of political failure that stems from a cultural clash. The cultural clash helps us understand the German (mis)-management of the Greek sovereign debt crisis and also provides a novel foundation for fiscal union desirability. The failure we focus on arises most clearly when two culturally distant populations must interact to solve a common problem. Hence it is inherently international, or, more generally, it has to do with the impact of domestic re-election or approval constraints on the strategies that political leaders play among themselves in the absence of a common agency. A political leader is constrained in terms of strategies by the cultural norms and beliefs of his electorate - what we call a "conformity constraint". Leaders of a country cannot pursue strategies that go against these deeply rooted norms and beliefs even when doing so could be welfare-improving for their citizens. For example, it would be very difficult for India's leaders to pass a law that forces Indian food firms to produce beef formula when a famine hits the country. Even if the policy could be the best one from a nutritional point of view and political representatives know this, it would simply fail to pass or if passed it would fail to succeed because it would most likely not be followed by the people. Anticipating this reaction, the leader would just avoid proposing it. The conformity constraint would be binding. Needless to say, if this is the mechanism at work in a domestic and culturally homogeneous context it would be hard to observe the dilemma that the informed leader faces - impose the law and save millions of children or conform to people's beliefs - as the latter strategy would always be chosen and the alternative would never be on the table. Hence one cannot learn about the importance (and the costs) of this political economy friction. This dilemma can instead be best appreciated when political leaders of different countries interact. In this case, the possibility that the optimal policy leads to a cultural clash, so that it is welcome to one of the two electorates but culturally opposed by the other, implies that, together with the dilemma of its adoption, it is on the table. We argue that such a friction can help us better understand Germany conduct in the management of the Greek (and more generally Europe's) sovereign debt crisis. Germany reaction to the discovery in October 2009 that the previous Greek government cooked the books to hide its lack of fiscal discipline was to "punish" the Greeks by "denying help" at various stages, but particularly at its start when according to various observers, early action would have contained the crisis. A survey by Emnid, a polling agency, in February 2010

reveals that nearly 70% of the Germans opposed aid to Greece. One of the consequences was an aggravation of the Greek crisis, a rise of risk premia on the Greek debt which worsened Greece ability to repay the debt, and a propagation of the crisis to the other PIIGS (Portugal, Italy, Ireland, Greece and Spain). Ultimately the Greek crisis has threatened the very survival of the Euro, an event that according to many observers would have extremely costly consequences not only for the Mediterranean countries in the Euro area but for Germany as well. Why would Germany be willing to run the risk of paying this cost? One answer is that the size of the cost is understated by German policy makers who do not understand the general equilibrium implications of their actions. This begs the question of why the other European leaders see the problem but only the German leaders don't. Without denying that some misunderstanding of the general equilibrium implications of their own actions by German political leaders may have played a role in such a complex crisis, an alternative explanation, one we propose here, is that German political leaders understand well what are the dangers of their actions and foresee the possible consequences of the "punishment" strategy for their country (i.e. they are informed representatives), but are bound by a conformity constraint: the need to conform with the widely shared and deeply rooted cultural norms of their fellow citizens that, as we document in detail in Section 3, establishes punishment of the "cheaters", which in this case happen to be the Greeks.[1]

In a recent article, Ardagna and Caselli (2012) have pointed out the difficulties of negotiations among heads of States at the European Council as a potential source of inefficient solutions for the Greek crisis, and they conclude that perhaps the best way to avoid negotiation-related political economy frictions would have been to let the IMF handle the Greek crisis. The type of political economy failures we identify are different and so is the solution: the failures stem from heterogeneous cultures and the clash that this heterogeneity in culture creates would therefore be best addressed by the creation of a new type of agency - a fiscal union - that is one that is free from conforming to the culture of any single country in the union. At the positive analysis level, we do not think the friction was (mainly) one of negotiation costs, because from the beginning the problem has basically been "what does Germany think", which therefore concerns more understanding Germany than understanding the negotiation process between Germany and others. At the normative analysis level, the cultural reasons why the Germans do not want

[1]Undoubtedly, political leaders may try to ease the conformity constraint by steering public opinion, but this usually takes time, which unavoidably delays action.

to save the Greeks unless the Greeks' sovereignty is suspended have to do with moral hazard (cheating expectations), and hence Germany would have opposed such saving even through the IMF. On the other hand, a fiscal union, which means elimination of the game between sovereign States, finds Germany more willing to help because not threatened by future moral hazard and finds Greek debt "less" punished. In other words, while IMF would still make donors upset about helping out countries who could be prone to moral hazard, going for a fiscal union that requires management of fiscal policy by a European finance minister would avoid the inefficient punishments as well as the risk of moral hazard and hence the worries and cultural clashes.

Though the creation of a fiscal union may be the best response to the cultural clash that in our view is at the root of the European sovereign debt crisis, it raises two questions. First, why was it not adopted in the first place when the Euro-area countries decided to merge into a monetary union? Second, why should it be appealing today given that it was disregarded before? We show that our model can rationalize the historical sequencing - that is the creation of a monetary union without a fiscal union - and the appeal of a fiscal union at a later stage, following the cultural clash.

For this we need first a notion of culture. By culture, people mean different things. For us a culture is represented directly by "what strategies people play", which will allow us to trace its evolution using replicator dynamics (as in Boyd and Richerson, 1985 and 2005). This simple notion of culture refers to behavior in interactive situations[2] and captures a key aspect of cultural norms: they evolve very slowly compared to the speed of change of formal institutions, particularly those related to governance (Williamson, 2000). While culture evolves gradually institutions can jump - a feature that makes the creation of a new institution a viable response to a cultural clash. We will first show that evolution can bring a homogeneous culture population (i.e., a population where everybody has the same perception of the frequency of the various actions and reactions) to multiple steady states. Depending on the initial conditions, an economy can either converge to a "cheat and forgive" equilibrium or to a "responsible actions and commitment

[2]Therefore, we do not deal with the source of individual cultural values. An alternative modelling strategy would be to derive explicitly the adoption of cultural norms letting parents optimally choose the values to teach to their kids as in Tabellini (2008b) and Bisin and Verdier (2000b, 2001) or the beliefs to instill, as in Guiso, Sapienza and Zingales (2008b), possibly accounting for learning through socialization (Bisin and Verdier,2000a).

to punish otherwise" equilibrium. We will often refer to these two equilibria as the Greek and German culture equilibrium, respectively.

The next step will be to study what happens when two populations playing different steady states and having different cultures merge into a monetary union. For us the term monetary union refers to a highly integrated form of union in terms of market transactions and hence greater potential for cross-country matches as a reflection of lower transaction and mobility costs entailed by a common currency. A fiscal union, instead, is there to represent a big step towards integrating governing institutions and authorities with a first order effect on the relationship between individuals and the latter, such as the incentive to cheat and punish. A monetary union carries benefits in terms of enlargement of the total available opportunities due to economies of scale and scope (e.g. Baldwin, 2006) which translate in larger (expected) payoffs to interacting parties. The cost is the potential exposure to a cultural clash which increases with the cultural distance between the merging countries. On the other hand, a fiscal union, in addition to a monetary union, carries benefits in terms of better management in the event of a clash at the cost however of loss in sovereignty, which we model as a cost unrelated to cultural distance.

We show that ex-ante, provided the expected benefits from integration into a monetary union are sufficiently large, countries may agree to join a monetary union but not to endow the union with new institutions - that is to form also a fiscal union - if the cost of loosing sovereignty is large enough. Ex-post, once the monetary union is formed members of the union will observe the realized benefits from participation in the union. If the latter are lower than initially expected - that is a "crisis" realizes - the cultural heterogeneity among the member countries may result is highly inefficient outcomes. Because national governments retain power and authorities are thus subject to the conformity constraint, the interactions between Greeks and Germans result into excessive cheating (by the Greeks) and excessive punishment (by the Germans) with a generalized loss of welfare which is increasing in the degree of cultural heterogeneity and which cannot vanish rapidly given the inertia of cultural norms. In such circumstances countries may reconsider participation in the union facing either the choice of breaking up and reverting to a national currency equilibrium or otherwise considering the creation of a fiscal authority that can be endowed with any punish-forgive strategy the players agree to, hence giving a better chance of converging to a superior steady state and with lower transition costs. We show that there are parameter values for which ex-post continuation of the monetary union and evolution into

a fiscal union is the preferred option. Interestingly, the space of parameters for which a fiscal union dominates a union without creation of a new enforcement authority increases with cultural difference.

Hence, the larger the cultural clash that induces larger differences in beliefs about punishing or enforcing probabilities, the more the trade-off should push towards advocating delegation of fiscal policy or more generally delegation to a third agent. Hence, the fact that Europe has countries with more heterogeneous cultures than it was the case in the US at the time of the Constitution should push towards an a *fortiori* argument in favor of centralization of fiscal policy, rather than the other way round, which is often the common sense.

The organization of the paper is as follows. In Section 2 we discuss how our papers is linked to the literature. In Section 3 we show evidence of the Greek-German cultural difference which opens up to the possibility of political clash when the two cultures are exposed to each other. In Section 4 we present our model of the evolution of culture and institutions and obtain our main results. The model can: *a*) rationalize two steady states where two different cultures prevail (the "German" and the "Greek") and we can think of them as capturing the pre-monetary union situation (Sections 4.3-4.4); *b*) rationalize the choice of the two countries to merge initially into a monetary union without a fiscal union to reap the economic benefits of a common currency while avoiding the political costs of surrendering fiscal autonomy. Thus the model can, in a very stylized way, account for the historical pattern of integration observed in Europe and single out the role played by cultural heterogeneity (Section 4.5); *c*) show that a fiscal union that was initially ruled out may become again appealing when the monetary union is hit by an adverse shock (which we can think as mapping the Great Recession and the associated European sovereign crisis) and the cultural clash is given a chance to manifest its adverse effects; here we show that the appeal of the fiscal union increases with cultural distance (Section 4.6). Finally, in Section 5 we provide some evidence that cultural norms did in fact play a role in the way Germany has managed the Greek crisis. Section 6 concludes.

2. Relation to the literature

This paper is related to several strands of literature. First, it is related to a burgeoning set of studies on the role of culture in explaining differences in economic prosperity across countries and communities (see among others Greif, 1994; Landes, 1999; Mokyr, 2012; Tabellini, 2008a; Guiso,

Sapienza and Zingales (2004, 2008a); Roland, 2010; and Nunn, 2012). These papers rely on the persistence of culture to explain enduring effects of old historical episodes on current differences in economic success. While we retain cultural persistence, we focus on the role that slow-to-change cultural norms and beliefs can play in dealing with shocks that are likely to occur at the business cycle frequency. Hence it bears a link with macroeconomics and the few papers that have attempted to insert culture into macroeconomic models (e.g. Akerlof, 2007) or test empirically whether culture can be a cause of macroeconomic imbalances (Buetzer et al, 2012). Furthermore, while most of these papers view cultural norms as affecting economic prosperity because they support cooperation and thus facilitate exchange among people (e.g. Tabellini, 2008a; GSZ, 2004, 2012; Landes, 1999), or because they enhance individual motivation (Gorodnichenko and Roland, 2011a), or because they dictate directly individual behavior (Akerlof, 2007), in our case cultural norms affect macroeconomic outcomes because they act as a conformity constraint on policy makers, limiting their freedom to adopt the best policy in the given circumstances. To our knowledge we are the first to notice the importance of this channel of influence and view cultural norms as a source of friction in political economy. Second, our work relates to various papers that rely on cultural distance to explain patterns of international trade (e.g. Guiso, Sapienza and Zingales, 2009; Fisman, Hamao and Wang, 2012). We highlight the fact that the conformity constraint is more likely to be identified when two (or more) cultures are merged - as when a pool of countries decide to enter an economic or monetary union - and thus a cultural clash can occur and become visible.

Third, the paper relates to a number of contributions that study the interplay between cultural norms (informal institutions) and legal norms (formal institutions) and their mutual influences. Several papers stress the fact that culture and legal institutions tend to coevolve (Tabellini, 2008b; Gorodnichenko and Roland, 2011b; Bisin and Verdier, 2012). In our model too in the long run institutions and culture may move together, but the process may be far from smooth. In our model institutions can change discretely - or at least at a much faster speed than culture. Hence, they may adjust in response to a potentially harmful cultural clash when a culturally heterogenous community is hit by a shock. Culture may subsequently and slowly adapt, possibly affected by the new institutional set up. Finally, our contribution is related to the literature on fiscal union desirability. Fiscal union can be beneficial for a variety of reasons; because it may produce greater equality (Morelli, Yang and Ye, 2012); because it provides stability and insurance

(e.g. Luque, Morelli and Tavares, 2012; Fahri and Werning, 2012); or because it may have a discipline effect - in the sense that when the policy is conducted at the union level the scope for local moral hazard by the participant countries is reduced. We stress the importance of fiscal union as a way of tempering and managing frictions in a culturally dis-homogeneous community that is already bound by a single currency or a free trade agreement. Said differently, faster to change institutions can be the solution to the costs imposed by slow to adjust cultural norms in response to a change in the environment.

3. The Greek-German Cultural Clash

We start documenting a significant cultural distance between Germany and Greece.[3] Table 1 panel A shows summary statistics on several measures of cultural traits in a sample of Germans and a sample of Greeks taken from the World Values Survey. We report about three sets of values and beliefs: measures of civic values, measures of cultural norms constructed by Tabellini (2008a) and a measure of people trust in other fellow citizens. We also summarize civic values and cultural norms with their principal component. The last two columns report the difference in these measures between Germany and Greece and the value of the t-test for the differences. The table documents a remarkable systematic difference between the values that are shared by the Germans and those shared by the Greeks: with the exception of whether accepting a bribe is justifiable (which is equally not justifiable in Germany as in Greece) all other values are highly statistically different in the two countries. The Germans tend to have higher civic values and stronger cultural traits (respect, obedience an control) that ought to encourage welfare enhancing social interactions (Tabellini, 2008a). Furthermore, the Germans tend to trust others more than the Greeks do by a large margin (14 percentage points more).[4]

However, these data do not say much on whether and how the two populations differ in their attitudes when it comes to the decision to punish others, a feature which seems to have played

[3]While we document cultural differences between Germany and Greece they may be taken as representative of the North/South (or "core" verus "periphery" as sometimes is labeled) cultural distance across countries of the Euro area. Buetzer et al (2012) build various indicators of national cultures for all the Euro area countries and compare cultural heterogeneity within Europe with cultural heterogeneity across countries in general.

[4]This is of course a measure of trust "within" cultures, whereas we expect that the trust in others when referring to people of the other culture drops significantly and maybe greeks trust Germans more than Germans trust the Greeks.

a critical role in affecting Germany position on how to manage the Greek crisis. Even though the fact that the Germans seem to consider to a greater extent than the Greeks that "Cheating on taxes is never justifiable", from this it does not follow that if they are given the possibility to punish a cheater they do it more often than the Greeks. Panel B sheds some light on this. It shows answers provided by the Greeks and the Germans to three questions asked in the European Social Survey that reveal their willingness to punish (or help the punishment of) wrongdoers. The first is: "How likely are you to call the police if you see a man get his wallet stolen ?", the second, "How willing are you to identify the person who had done it?", the third "How willing are you to give evidence in court against the accused?". Answers are provided on a scale from 1 to 4, ranging from "not at all willing" to "very willing".

On each of the three accounts the Germans are significantly more willing to punish wrongdoers than the Greeks. The difference appears neatly in Figure 1 which shows the distribution of the answers for the samples in the two countries. For example, 79% of the Germans compared to 59% of the Greeks are "very willing" to call the police and 70% of the Germans are "very willing" to identify the person compared to only 45% of the Greeks.

Yet, rather then reflecting different cultures the difference in willingness to report and collaborate with the police may reflect other features - e.g. a more efficient German police which increases Germans motivation to collaborate as they can see the benefit of their effort. A very interesting experiment done by Herrmann et al. (2008) provides evidence that is free from this objection. They run a public good game experiment using 16 comparable participant samples from countries around the world, including Greece and Germany. The public good game aims at mimicking situations that require some degree of cooperation to achieve a socially beneficial outcome - as with the financing of a public good. They endowed participants with 20 tokens and let them play in groups of four. Each participant had to decide how many tokens to keep for themselves and how many to contribute to a group project. Each member of the group earned 0.4 tokens for each token invested in the project, regardless of whether he or she contributed any. Because the cost of contributing one token to the project was exactly one token whereas the return on that token was only 0.4 tokens, keeping all own tokens was always in any participant's material individual interest, irrespective of how much the other three group members contributed. Besides the contribution decision, in one of the treatments of the games each participant was given also the possibility to punish each of the other group members after they were informed

about the others' contributions to the public investment. The punishment was in the form of a monetary loss imposed on the punished by the punisher, who retained his anonymity.

When no punishment is available the Germans tend to contribute more to the public good than the Greeks, thus showing that the latter tend to free ride more frequently. Not surprisingly, the Germans produce more public good than the Greeks. When players are given the possibility to punish the other players upon seeing their contributions, what they find is striking. The Germans overwhelmingly use part of their endowment to punish those who contributed less. The Greeks, on the contrary, not only do not punish those who free ride but tend instead to punish those who contribute more than them! That is, they exhibit what Herrmann et al. (2008) label antisocial punishment. Put differently, Germany seems to be characterized by a culture of cooperation and social punishment where people are endowed with behavioral rules that ask them to contribute to the public good and to punish those who do not, thus providing a mechanism to enforce cooperative behavior. In Greece it seems to prevail a week culture of cooperation that justifies free riding behavior and where cooperators, not free riders, are given a hard time. It may not sound surprising that these two cultures may clash when forced to interact with each other as the management of a financial crisis under a common currency requires.

We now turn to set up a formal model of how these two culture may arise in the first place and what happens when individuals with a culture of "Cheating and Forgiving" interact with people that play according to a culture of "Responsibility and Punishment". We will show that the extrapolation of domestic rules to the international game may produce suboptimal behavior .

4. Model of Evolution of Cultures and Institutional Choice

4.1. **Big Picture and Setup.** Given the strong evidence that culture evolves endogenously but slowly, and different cultures can coexist,[5] we adopt a simple evolutionary model where

[5]A growing literature provides models of how culture is transmitted and why it persists. In an earlier contribution, Bisin and Verdier (2000a) attribute cultural transmission to the parents' desire to have children with values similar to themselves. Tabellini (2008b) identifies the source of cultural persistence in the fact that parents use their own preferences in deciding which set of values to instill in their children. Finally, Guiso, Sapienza and Zingales (2008b) claim that persistence is the reflection of a bias in the transmission mechanism: because parents are more likely to bear the cost of children's mistakes' than to enjoy the benefits of their successes, they are conservatives in the set of values they choose to transmit. Another branch of this literature is empirical and

strategies adjust following replicator dynamics, as in Boyd and Richerson (1985, 2005). In our setup, as in many others with different frictions (see e.g. Tabellini 2008b), the existence of different cultures will be described as existence of multiple steady states to such an evolutionary process. However, in contrast with the other models of culture multiplicity, we will also endow the *leaders* of countries with different cultures with the ability to *agree* on a change of institutions if the respective countries merge. Our broad view is that while the cultures of populations evolve slowly, institutions can be subject to discontinuous jumps, even though the leaders themselves have to conform to their respective cultures when making such institutional choices. This, for instance, captures the construction of a common currency among a set of culturally heterogeneous European countries and is consistent with Williamson (2000) characterization of the speed of change of different types of institution.[6]

In line with the broad view described above, we will first describe an economy as a set of bilateral interactions between pairs of agents that are programmed to play specific strategies, like in any replicator dynamics model; then we will compute the steady states of economies that start from any initial combination of programmed strategies; then we will let the leaders of different countries (whose people have converged to different steady states) decide whether they want to merge their economies or not, and, in the case the answer is yes, whether they want to do so maintaining their respective sovereignty or whether they want to create a set of alternative authorities. We will show the conditions under which if new institutions are created the merging of cultures can lead to more beneficial coexistence and eventually convergence with respect to the case in which people and countries with different cultures insist to keep their own institutions. Finally, we will show that when technology, endowments, or the size of economies of scale are uncertain and subject to shocks, such an exogenous dynamics affect both the slow cultural changes and the discrete jumps in institutional choices in a way that can help us interpret the European dynamics from the end of the 20th century to present times institutional discussions, including the management of the sovereign debt crisis. Indeed, we argue that the latter is hard

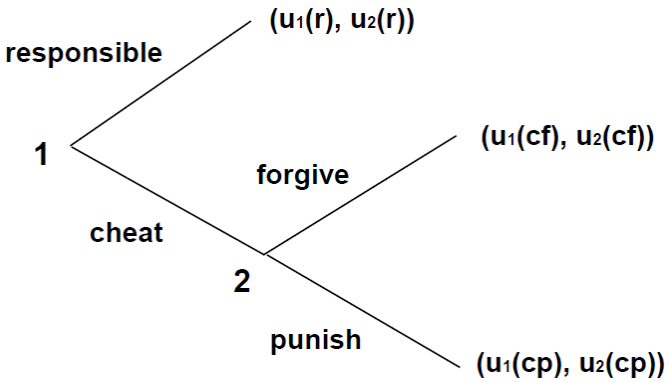
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focuses on the persistence of cultural attitudes over several centuries long periods of time (Nunn and Wanchekon, 2011; Voigtländer and Voth, 2012; Grosjean (2011); Alesina et al., 2011)) or across three or four generations (e.g. Tabellini, 2008a), Algan and Cahuc (2010).

[6]According to Williamson (2000), while cultural norms typically change at a frequency (in years) between $10^2$to 10^3, governance instututions can change every 10 years.

to understand without a model that can rationalize the sequence of steps that led European countries to choose a particular pattern of (sequential) integration where cultural heterogeneity is properly accounted for.

4.2. **Typical bilateral interactions.** We assume that an economy can be described as a set of bilateral principal-agent transactions. In each pair of players there is always one player who can choose between a *responsible action* (e.g. when an agent chooses the action desired by the principal without moral hazard or simply when an agent decides to respect the law in the presence of temptations to do otherwise) and a *cheating action* (e.g. when an agent shirks or falls for the temptation of dishonest short run gains); then there is always a second player (a principal or a counterpart in a contract of whatever kind or the State) deciding (or implementing) a reaction, which can be captured by the choice between *punishment* and *forgiveness*. The dynamic representation of this basic game of economic interaction is as follows:



Assumption 1: $u_1(cp) < u_1(r) < u_1(cf)$ and $u_2(cp) < u_2(cf) < u_2(r)$.

In words, this assumption says that a player finding herself in the position of player 1 (first mover) has a utility from cheating and being forgiven higher than the utility from responsible behavior, while for a player finding herself in the position of player 2 (principal) the order of utility levels for those action profiles are reversed. Moreover, for both players the least desirable action combination is when player 1 cheats and player 2 punishes, since in that case the cost inflicted by the first mover to the second is basically reciprocated by another costly action, potentially costly for both players. Finally, in case of responsible behavior r, we assume for simplicity that the action by player 2 is payoff irrelevant: for example, if responsible behavior implies that no

debt is accumulated, then it doesn't matter whether the other player is willing to lend to player 1 or not.

Under assumption 1 there are two Nash Equilibria: The first Nash Equilibrium, (c, f), is subgame perfect; the other equilibrium, (r, p), is not subgame perfect when player 2 moves after observing player 1's choice (it involves the ex ante non credible threat to punish after a cheating action by player 1).[7]

Responsible actions are in most interpretations associated with higher total welfare, hence we assume that

Assumption 2: $\sum_i u_i(cf) < \sum_i u_i(r)$.

In words, the unique SPE of the game in the absence of commitment is suboptimal in the utilitarian sense. The equilibrium (c, f) is preferred by a player in role 1, but it does not maximize total welfare. We can think of this equilibrium as the most likely equilibrium emerging in most types of economic interactions among Greeks. On the other hand, we can think of the German cultural values as crucial ingredients to produce the ability to commit to enforce contracts, laws and responsibility, in a nutshell allowing to obtain the higher welfare Nash Equilibrium. When Germans interact among themselves, they understand that the credibility of punishment threats is high, hence no cheating, hence no inefficient punishments in equilibrium.[8]

If we observe that one Nash equilibrium is always played in a country and the other Nash equilibrium in another country, there are many senses in which we could say that the two countries display different cultures. If all agents in an economy are homogeneously convinced, when they are in player 1's position, that player 2 will not punish after a cheat, naturally the (c, f) equilibrium prevails. If everybody in the economy expects a player in player 2's role to punish, then responsible behavior prevails. However, when the economy is no longer homogeneous in beliefs, the expectations may differ and we need to study how do beliefs adjust over time. Similarly, and this is going to be the primary and most direct way to model cultural evolution, we can view a

[7]Note in fact that the strategy punish of the first column has to be interpreted as a commitment to punish after cheating, while after a responsible action of course there is nothing to punish, which explains why we are assuming that $u_i(rp) = u_i(rf) = u_i(r)\ \forall i$.

[8]The simpler way to formalize this in the standard world of rational agents is to allow for repetition of the game and see the different perceptions of commitment likelihood simply as different equilibria in the repeated game. We chose instead the evolutionary model for the reasons expressed above.

culture simply as a set of strategies that people use when playing in a role, rather than relating to beliefs.

In what follows we analyze the evolution of strategies starting from any initial condition in terms of culture, i.e. starting from any set of initial strategies (and, equivalently, we could do the same in the case of culture as beliefs).

4.3. **Evolutionary Replicator Dynamics.** Consider first an economy in isolation. Suppose that such an economy is large, in the sense that there are a large number of matches between players, or, equivalently, a large number of expected transactions, and in every such random match one player (random or not) is in the position of player 1 in the game form described above and the other one in the shoes of player 2.[9]

Pairs of individuals, one from the population of agents (role 1) and one from the population of principals (role 2), are randomly matched to play the game above. Each individual is programmed to play one of the two pure strategies available to her.

Denote by $x \in [0,1]$ the fraction of first movers programmed to play Cheat, and by y the fraction of second movers programmed to play Forgive. A state of the world is fully characterized by the population split (x, y). Starting from any initial population split (x, y), we want to see how this population split evolves over time and whether it converges to a steady state.

Standard replicator dynamics logic implies that for any given population split (x, y) the proportion of individuals playing Cheat (x) will increase if and only if the payoff to playing Cheat is larger than the average payoff of first movers. More precisely, the relative change in x is proportional to the fitness of the strategy Cheat, i.e. the difference in payoffs between Cheat and the current average payoff of first movers, namely

$$\frac{\dot{x}}{x} = (u_1(cf)y + u_1(cp)(1-y)) - (u_1(r)(1-x) + u_1(cf)xy + u_1(cp)x(1-y))$$

[9]It could be that in some types of transactions some agents are always first moving agents and others are always second moving principals, but the analysis applies to also all other more symmetric situations in which whoever moves first falls automatically in the role of player 1.

Likewise, according to replicator dynamics the relative change in y is proportional to the fitness of the action Forgive relative to the average fitness, namely:

$$\frac{\dot{y}}{y} = (u_2(cf)x + u_2(r)(1-x)) - (u_2(r)(1-x) + u_2(cf)xy + u_2(cp)x(1-y))$$

where the first term is the payoff of Forgive against a proportion $(x, 1-x)$ of first movers, the second is the average fitness or payoff of the population $(y, 1-y)$ against a proportion $(x, 1-x)$.

4.4. **Steady States.** Normalizing $u_i(cp) = 0 \ \ \forall i$, the system can be written as

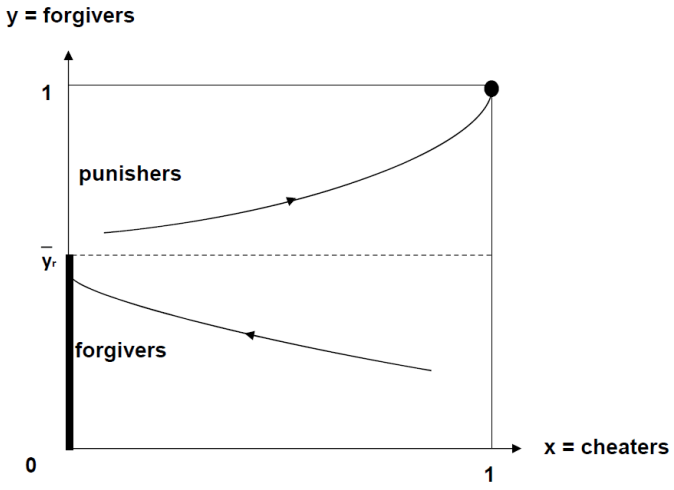
$$\begin{aligned} \frac{\dot{x}}{x} &= (u_1(cf)y - u_1(r))(1-x) \\ \frac{\dot{y}}{y} &= u_2(cf)x - u_2(cf)xy \end{aligned}$$

Starting from any initial interior population split (x_0, y_0) the system evolves in the following way: x decreases and eventually reaches zero if $y_0 < \overline{y}_r$, with $\overline{y}_r = u_1(r)/u_1(cf)$, otherwise x increases and eventually reaches one if $y_0 > \overline{y}_r$. Namely, a high enough population of forgivers makes the Cheaters survive and thrive, a high enough population of Punishers makes the Cheaters die and the Responsible thrive.

Proposition 1. *For each country in isolation there are two types of steady states:* ***Steady state 1:*** *all Cheaters and Forgivers* $(x_1 = 1, y_1 = 1)$*. and* ***Steady state 2:*** *first movers all Responsible and a critical mass* $(1 - y_r)$ *of Punishers* $(x_r = 0, y_r \in [0, \overline{y}_r])$*.*

Steady State 1. is what prevailed in Greece: any mutation, e.g. a small percentage of Punishers or of Responsible agents, would die out.

Steady State 2 is what prevailed in Germany: any mutation, e.g. a small percentage of Cheaters first movers would die out because they faced costly Punishment (this punishment is costly to the second movers).



4.5. **Integration choices.** Start from a situation in which the two countries - "Germany" and "Greece" in our exemplification - were examples of "closed homogeneous economies" that converged to the two steady states described above. Now merge the two populations. While population strategies evolve slowly as described above, leaders of countries can make institutional decisions - with treaties or alike - with standard utility calculations. However, when they do so their utility function needs to *conform* to their cultural base, in the manner described below.

While in any economic or political match in which a German in player 1's role r is efficient because the Germans do not change their behavior in player 1's position, in matches in which a Greek is in player 1's role followed by a German, determines the worst possible outcome in that period: Cheat-Punish. The aggregate consequences of all such matches, the macro consequences are dismal: the Greeks behavior at the many levels of economic activities and irresponsible fiscal policy put the Germans in the position to decide whether to punish or not upon having reached the cheating node.

The direct connection between the games played by citizens in every day-life match and the relationship between States is due to conformity constraints: the German policy maker that plays in the column player role has to follow the culture of the German citizens, and the Greek policy maker has to follow the strategy of the Greek citizen/voter for the same reason. The shift from individuals to States could be done in many ways, but the use of the conformity constraints is the easiest. It amounts to assuming that the leader of a country has to conform to the current culture of her citizens when dealing with other governments. However, leaders can also agree on

changing the institutions regulating their interaction – making various steps towards integration. Assuming the two countries are at their different steady states at the moment of consideration of an institutional change, then if merging the two economies provides no advantage in terms of economies of scale or scope or alike, no merging would be preferred because of the adjustment costs due to the costly Cheat-Punish matches occurring on the new path.

We see a benefit of merging the economies in the enlargement of the total available opportunities due to economies of scale or scope (as was stressed in the debate around the creation of the single currency, see Baldwin, 2006 for a review)). In any bilateral relation in the new merged economy this enlargement of the "cake" can be captured by some scaling up of the payoffs in the original payoff matrix, while keeping assumptions 1 and 2 satisfied. We will denote by λ the scaling factor due to the merger. The advantage described below of choosing a fiscal union in addition, is that a fiscal union allows the creation of new institutions taking the role of principal in many relationships, and such a new set of principals can be endowed with any punish-forgive strategy the players agree to, hence giving a better chance of converging to a superior steady state and with lower transition costs. The cost is the loss of sovereignty. We will try to model this choice in the simplest possible manner, distinguishing the choice at an ex ante stage in which the economic advantages of a union are uncertain from an ex post stage in which the utility effects of economic union is known.

4.5.1. *Monetary Union without New Institutions.* For reasons related mostly to debt accumulation or financial strength, Greece is often in the agent's role and Germany is often in the principal column player role.[10]

The conformity constraint implies that the Greek leader has to conform to the 'cf' equilibrium while in Germany the presence of a critical mass of punishers induces the leader to punish many cheating actions. The "forgiving" Greek authorities and the "punitive" German authorities have

[10]We repeat here that this vision is also compatible with a microfoundation that views every economy as a collection of bilateral matches, showing that only Greek agents and German principals suffer the consequences of the cultural clash, and hence the sum of such situations can generate an aggregate relationship that is equivalent to that between leaders of the two countries that is postulated here on the basis of the conformity constraint. The introduction of the common currency and the elimination of most frictions inhibiting cross-country matches, determine a situation in which economic interactions are often bilateral contracts between players from different cultures, i.e., between individuals that are programmed to play different strategies.

to coexist, and the game between leaders of States with such extremely different cultures is costly: all actions by Greek agents involve cheating and a critical mass of reactions are punishments, leading to payoffs equal to (0,0) until one of the two strategies die off.

Given that all Greeks forgive and only a fraction y_r of Germans forgive, we can define $(1-y_r) \in [1-\overline{y}_r, 1]$ as a measure of *cultural difference*.

Proposition 2. *Total welfare from (monetary) integration without new (fiscal) institutions is decreasing in the cultural difference* $(1-y_r)$

Proof. The payoff (average fitness) for a merged population (under a union (U)) characterized by (x_0, y_0) is for each mover:

$$\begin{aligned} U_1^U &= u_1(r)(1-x_0) + u_1(cf)x_0y_0 \\ U_2^U &= u_2(r)(1-x_0) + u_2(cf)x_0y_0 \end{aligned}$$

Hence total welfare is

$$U_T^U = (u_1(r) + u_2(r))(1-x_0) + (u_1(cf) + u_2(cf))\, x_0y_0$$

If the populations of Greece and Germany are respectively g and G, and if Greece and Germany start from their respective steady states we have:

$$x_0 = \frac{g}{g+G}, \quad y_0 = \frac{g+y_rG}{g+G}$$

$$U_T^U = (u_1(r) + u_2(r))\frac{G}{g+G} + (u_1(cf) + u_2(cf))\frac{(g+y_rG)\,g}{(g+G)^2}$$

so it is increasing in $(1-y_r)$. □

If being in a monetary union involved *no* additional surplus creation, then forming a union without new institutions that could alter the cheat and punish frequency would make sense only for Greeks.

Proposition 3. *Absent surplus creation: 1. Greeks prefer a monetary union if there is a high enough share of German forgivers* y_r. *2. Germans prefer no monetary union.*

Proof. Welfare before the union is (which can be broken down for the various types)

$$U_g = u_1(cf) + u_2(cf), \quad U_G = u_1(r) + u_2(r)$$

We need to analyze the gains from a union from the various types, Greek first and second movers:

$$U^U_{g1} = u_1(cf)y_0 + 0\,(1 - y_0)\,, \quad U^U_{g2} = u_2(r)(1 - x_0) + u_2(cf)x_0$$

The *welfare gain* from a monetary union from the Greek perspective is

$$\begin{aligned} \left(U^U_g - U_g\right) &= (u_1(cf)y_0 + u_2(r)(1 - x_0) + u_2(cf)x_0) - (u_1(cf) + u_2(cf)) \\ 0 &= -u_1(cf)\left(\frac{(1 - y_r)\,G}{g + G}\right) + (u_2(r) - u_2(cf))\left(\frac{G}{g + G}\right) > 0 \end{aligned}$$

Hence, we have $\left(U^U_g - U_g\right) > 0$ when $y_r > y^g_r$ with:

$$y^g_r := 1 - \frac{u_2(r) - u_2(cf)}{u_1(cf)}$$

The share of Punishers among Germans (i.e. the heterogeneity) needs to be bounded for Greeks to prefer the monetary union, but when $u_2(r) > u_1(cf) + u_2(cf)$ the constraint does not bind: the Greeks benefit from the monetary union regardless. German first and second movers after the union

$$U^U_{G1} = u_1(r), \quad U^U_{G2f} = u_2(r)(1 - x_0) + u_2(cf)x_0, \quad U^U_{G2p} = u_2(r)(1 - x_0) + 0x_0$$

We assume a German is a forgiver with chance y_r, so:

$$U^U_{G1} = u_1(r), \quad U^U_{G2} = u_2(r)(1 - x_0) + y_r u_2(cf)x_0$$

The *welfare gain* from a monetary union from the German perspective is always negative for any $y_r \in [0, 1]$

$$\begin{aligned} \left(U^U_G - U_G\right) &= (u_1(r) + u_2(r)(1 - x_0) + y_r u_2(cf)x_0) - (u_1(r) + u_2(r)) \\ &= -\frac{g}{g + G}\,(u_2(r) - y_r u_2(cf)) \end{aligned}$$

Hence, the condition $\left(U^U_G - U_G\right) > 0$ holds when $y_r > y^G_r$ with:

$$y^G_r := \frac{u_2(r)}{u_2(cf)} > 1$$

which is violated for any $y_r \in [0, 1]$. □

The Germans will always lose by encountering Greek cheaters, but their loss will be smaller the more they are able to forgive.

Hence, there needs to be some surplus creation to have a beneficial monetary union for all participants, and this surplus needs to be large enough for the Germans to prefer the monetary union. We call $\lambda \geq 1$ this surplus creation that acts in a multiplicative way on the payoffs after the responsible action r.[11]

Proposition 4. *With surplus creation the monetary union is preferred by both countries for small enough heterogeneity between the two countries. With large enough surplus creation, both countries strictly prefer the monetary union for any level of heterogeneity.*

Proof.

$$\begin{aligned} U_g^U - U_g &= (u_1(cf)y_0 + \lambda u_2(r)(1-x_0) + u_2(cf)x_0) - (u_1(cf) + u_2(cf)) \\ &= -u_1(cf)\frac{G\,(1-y_r)}{g+G} + (\lambda u_2(r) - u_2(cf))\,\frac{G}{g+G} > 0 \end{aligned}$$

Hence, we have $\left(U_g^U - U_g\right) > 0$ when $y_r > y_r^g\,(\lambda)$, with:

$$y_r^g\,(\lambda) := 1 - \frac{\lambda u_2(r) - u_2(cf)}{u_1(cf)}$$

$y_r^g\,(\lambda)$ is decreasing in λ and the constraint does not bind for high enough λ, namely:

$$\lambda := \lambda_g = \frac{u_1(cf) + u_2(cf)}{u_2(r)} \quad \Longrightarrow \quad y_r^g\,(\lambda) = 0$$

As for the Germans we have:

$$U_G^U - U_G = (\lambda u_1(r) + \lambda u_2(r)(1-x_0) + y_r u_2(cf)x_0) - (u_1(r) + u_2(r))$$

[11]To see why it is reasonable to make the monetary union have a multiplier effect only for responsible actions, consider a standard principal agent relation between a bank and a borrower. If a borrower cheats (runs away with the money) the utility of the cheater, if not punished, is the value of the money, which doesn't necessarily change after a monetary union; on the other hand, the economies of scale, reductions of transaction costs, lower frictions in all markets, greater possibilities of export for the countries who had a strong currency before the union, all these things make the probability of success, for a borrower who invests the money on the proposed project responsibly, higher.

Hence, we have $\left(U_G^U - U_G\right) > 0$ when $y_r > y_r^G(\lambda)$, with:

$$y_r^G(\lambda) := -\lambda \frac{(u_1(r) + u_2(r))\frac{G}{g} + u_1(r)}{u_2(cf)} + \left(1 + \frac{G}{g}\right)\frac{u_1(r) + u_2(r)}{u_2(cf)}$$

$y_r^G(\lambda)$ is decreasing in λ and the constraint does not bind for high enough λ, namely:

$$\lambda := \lambda_G = \frac{1 + \frac{G}{g}}{\frac{u_1(r)}{u_1(r)+u_2(r)} + \frac{G}{g}} \quad \Longrightarrow \quad y_r^G(\lambda) = 0$$

□

In sum, if for some $\lambda \geq 1$, $y_r < y_r^G(\lambda)$, then the monetary union without a new fiscal authority would not be viable for the Germans. For any $\lambda \geq \max(\lambda_g, \lambda_G)$ a monetary unions is preferred by both countries regardless of the level of heterogeneity between the countries $(1 - y_r)$.

The above focuses on the short run costs of a monetary unions. In the long run the risk of a monetary union is the possible convergence to the inefficient steady state, which might happen if later in the evolution of the dynamical system the threshold $\overline{y}_r$ is passed and the cheaters start to prosper again. The latter happens if the initial $y_0 = \frac{g+y_rG}{g+G}$ and/or $x_0 = \frac{g}{g+G}$ are large enough, so namely if the proportion of German forgivers and of Greeks is large enough relative to the total population.

4.6. **Integration with Creation of a Central Authority.**

4.6.1. *Crisis and Break-up.* Suppose λ is subject to shocks. If λ is expected to be high ex-ante, then $y_r^G(\lambda)$ and $y_r^g(\lambda)$ are expected to be low and hence a monetary union (without creation of a new authority) is preferable. However, if λ after the monetary union is revealed to be low (e.g. a crisis happens), then a breakup would be the natural outcome. In particular, if $y_r^G(\lambda) > 1$, then no union is preferred to a monetary union.

4.6.2. *Fiscal Union.* A fiscal union eliminates the game between the two separate leaders with independent sovereignty. We assume for simplicity that this means that the new fiscal authority or enforcement authority is endowed with a fixed probability of forgiveness $y' > 0$ that the leaders agree on.

There exist parameter values under which both countries prefer to choose a new institution (fiscal union) that allows for an a fixed frequency of punishments $(1-y')$ .The higher the initial cultural difference $(1-y_r)$, the greater the space of parameters where a fiscal union with exogenous forgiveness y'can be beneficial.

The creation of a fiscal union entails a cost which can be thought of as both the cost of creation of such an institution and the cost of lost sovereignty. This cost C is higher in good times (high λ), because when returns are high then there is more to redistribute for local constituencies by politicians.[12] We hence assume the cost function $C(\lambda)$ is increasing and unbounded.

Proposition 5. *Both countries prefer the fiscal union to the monetary union if and only if $y' > y_r$ and λ is below a threshold.*

Proof. The fiscal union is preferred by both countries if the gain over the monetary union exceeds the cost of the union. Namely,

$$U_g^{FU} - U_g^U = (y' - y_r)\, u_1(cf) \frac{G}{g+G} > C(\lambda)$$

$$U_G^{FU} - U_G^U = (y' - y_r)\, u_2(cf) \frac{g}{g+G} > C(\lambda)$$

□

The benefit of a fiscal union is the short run avoidance of surplus destroying matches. The intermediate $y' > y_r$ cannot exceed $\overline{y}_r = \frac{u_1(r)}{u_1(cf)}$, because it would lead to the wrong steady state. Beyond the cost of losing sovereignty another long run cost of the fiscal union is that convergence to the steady state is slower the larger $y' \in [0, \overline{y}_r]$ as the evolution is:

$$\begin{aligned} \frac{\dot{x}}{x} &= (u_1(cf)y' - u_1(r))(1-x) \\ \frac{\dot{y}}{y} &= u_2(cf)x(1-y') \end{aligned}$$

[12]The literature in political economy is full of seminal works emphasizing the importance of strategically targeting different groups in society – see e.g. Lindbeck and Weibul (1987), Dixit and Londregan (1995), Lizzeri and Persico (2001). So, the opportunity cost of the formation of a fiscal union for politicians who have to agree to form it is higher in good times, since in good times the incumbents can more easily orchestrate reelection through strategic targeting, which they won't be able to do once the purse of fiscal policy moves to a centralized ministry.

hence both populations evolve slower towards the efficient steady state.

5. Evidence

In this section we offer some evidence in support of our story. We start reporting some casual anecdotal evidence and then discuss some more systematic evidence drawing from recurrent polls on samples of Germans and other European countries.

5.1. **Anecdotal evidence.** There are several pieces of casual evidence pointing in the direction that cultural factors played a big role in how Germany has handled the Greek crisis, some reported on the newspapers other reported privately to us. For instance, French newspaper Le Canarde Enchainé reports that they heard France president Sarkozy saying off the records "we are paying the cost of German orthodoxy" with reference to the German resistance to second aid proposal to Greece (Le Canarde Enchainé, January 18, 2012). Even more telling is the story reported by a Greek colleague of hours who teaches Economics in a German University in Frankfurt as it reflects the sentiment of the German population. After it became public that Greece cheated on the budget and the Greek crisis started to emerge as a problem, his secretary recommended him to be much more careful in handling accounting matters; he was puzzled by the recommendation and he asked why. The answer was: "you know, you are Greek, and after this scandal..... you and us better become more careful".

Even more surprising is what we have been told by an economist at the European Central Bank. He reported to us that some German colleagues were severely criticized and ostracized by their parents and relatives because in their view the European Central Bank was too lenient towards Greece, to the point that one of them had to consult a psychologist.

A third piece of casual evidence suggesting that cultural factors seem indeed to be an integral part of the way Germany has handled the Greek crisis is the following reconstruction of Thomas Wieser's interpretation of the German government behavior in the management of the crisis.[13] In private talks he has argued that all the problems that Europe is facing in dealing with the Greek crisis can be explained in terms of religious background, and has provided the following

[13]Thomas Wiser is the Chairmen of the Economic and Financial Committee of the European Union; the committee prepares the economic agenda for the European Finance meetings and is thus exactly the place where negotiations on how to tackle the European sovereign debt crises take place.

rationale. In countries with a relevant presence of Protestantism, such as Germany, moral and religious precepts are so severe and that you will never be forgiven for your sins, nor will people grant forgiveness to the sinners. In Catholic dominated countries, such as Italy, Spain, Portugal and Ireland - four of the five PIIGS - behavior is such that if you sin you can always be forgiven if you repent and so make it into paradise. Finally, according to Wieser, Orthodox religion is so loose that in countries dominated by it - of which Greece is the leading one - if you sin there is even no need to repent to make it into paradise. This story is perfectly consistent with ours but goes even a step further, as it provides a rationale for *why* the Germans feel so obliged to punish the Greeks (the sinners) and why the Greeks cheated on the budget: their religious background, dominated by Protestantism in Germany and by the Orthodox church in Greece.

5.2. **Evidence from polls.** We use two recurrent polls sponsored by public TV stations. The ARD, which runs the Deutschland-TREND survey, and the ZDF sponsors Politbarometer survey data gathering information on German citizens feelings and opinions about the management of the crisis as well as confidence and support for their leader Angela Merkel. Table 2 shows answers provided by participants in the polls interviewed at various points in time to different type of questions that we have organized in groups and numbered for easy of reference. The first set of questions (1 to 6) shows people opinions about whether Greece deserves being helped and how Greece should be treated. Already in February 2010, few months after the discovery that the previous Greek government cheated on the budget and when the debate was around the potential size of the aid required to avoid Greece default, a poll by Emnid reveals that 67% of the Germans oppose any aid. Again, in July 2011, when governments were discussing about the second tranche of transfers to Greece, the vast majority of the Germans (60%) is against giving Greece a second round of rescue loans (question 1) and in October they continue to express a negative opinion about whether the other European governments (not the German) should continue to give support to Greece. In addition, more than 80% report that Greece should be forced to leave the Euro if they did not accept the decisions on the euro rescue (question 3). The pattern of answers is consistent with the idea that the opinions of the Germans were guided by the desire to punish the Greeks (or Greece) for their Government deceptive behavior. Interestingly, we can exclude that this opinions are driven by stereotypes towards the Mediterranean countries because the vast majority of the Germans (70%) when asked in September 2011 support the idea that

Germany helps economically Libya's reconstruction following the liberation war fought against Gaddafi (question 8). And we can also exclude that the opposition to support Greece reflects a generic punishment towards European countries with problematic public finances, because when the Germans are asked which country among the PIGS, should be allowed to continue to be part of the Euro, only a minority of them report that Greece should remain in the Euro while the vast majority answers that Spain, Italy and Ireland should stay in the Euro (with percentages in support of each country equal to 77%, 73% and 67% respectively). It is again the desire to punish Greece that leads the vast majority of the Germans (77%, question 8) to dislike the expansion of the funds of the European Financial Stability Fund.

This is further confirmed by the Pew Research Center report who asks a sample of Germans to report whether they have a very favorable, somewhat favorable, unfavorable or very unfavorable opinion of Greece and several other European countries. In the Spring of 2012 79% of the Germans have an unfavorable opinion of Greece and this is even higher than it was in the Spring of 2010 (Table 3); Germans have instead mild unfavorable opinions towards Italy and Spain despite their troubled public finances: in the Spring of 2012 33% of the Germans have an unfavorable opinion of Italy and 26 of Spain and these opinions are not different from those expressed in early 2010 when the sovereign debt crisis had not ye extended to these countries. Interesting, the judgement of the Germans vis à vis Italy and Spain is not different from the opinion they have of the British (Table 3), again suggesting that these opinions reflect a specific reaction in Germany to Greece behavior.

These sentiments, besides being widespread among representative sample of the general population and thus very likely reflecting the opinions of the German median voter, they are shared also by specific segments of the German population, namely the business community which was particularly sensitive to a quick resolution of the euro crisis. As Figure 2 shows, The vast majority of the German managers (81%) think that the most serious risks for the German economy come from the euro crisis (Panel A); at the same time two out of three argue that the best response to this crisis is to impose heavier sanctions to the debt transgressors - that is to punish Greece.

These opinions, we argue, have to be followed by Mrs. Merkel who is bound by the conformity constraint. One then expects that if she conforms to the constraint this should be reflected in the consensus polls. Indeed, as Angela Merkel has insisted in her severe policy towards Greece

(culminated in January 2012 in a proposal made informally to the other member countries of the Eurozone to appoint a European commissioner with veto power on budget decisions taken by the Greek government - Financial Times, January 27 2012 - as a condition for approving the new rescue plan; this proposal was subsequently openly supported by the President of the ECB -Spiegel, Octber 28 2012), approval of her policy has increased steadily: in September 2011 45% were satisfied with the way Angela Merkel was handling the crisis; the proportion increases to 56% in November (question 10, Table 2) and 80% in the Spring of 2012. Interestingly, this is consensus towards Merkel not towards her party as the vote intentions show little change (Table 2, question 11). This is consistent with another implication of our story: whatever party or leader is in charge should be equally subject to the conformity constraint. Hence, political opinions should be little affected.[14]

Finally, if punishment by the Germans has played a role in the management of the crisis, then one would expect to see that: a) since people do not like to be punished, we should observe some resentment of the "punished" towards the "punisher"; b) the unfavorable opinions towards Greece should be stronger in countries with a stronger culture of punishment.

As for the first implication, according to the Pew Research Center May 2012 Global Attitudes Report, anti-German sentiment has become prevalent in Greece, where a majority (78%) has an unfavorable opinion of Germany, and nearly half (49%) of the population saying they have a very unfavorable view and Germany scores the largest fraction with an unfavorable opinion among the Greeks (Table 3, Panel C) whereas it scores the lowest fraction of unfavorable opinions in most of the other countries sampled (Table 3, Panels C-F). Greece is the only country where a majority (84%) thinks German Chancellor Angela Merkel is doing a bad job dealing with the economic crisis. And they are intensely critical: 57% say she is doing a very bad job and the Greeks are the least likely among Europeans surveyed to say the Germans are hardworking.

[14]Our model is consistent also with the fact that the Greek voters "punished" Papandreu in 2012 elections rather than the conservative party that was responsible for cheating on the budget and thus for the subsequent German reaction. One can interpret Greek voters behavior in terms or the anti-social punishment that characterizes Greece culture documented by Herrmann et al. (2008): they "punished" the person who revealed that cheating occurred rather than punishing the cheaters. This is not to say that this was the main driver of the vote; for instance, the Greeks may have voted against Papandreu also because they did not like his austerity policy.

We provide some suggestive evidence on the second implication correlating the share of people of different European countries that, according to Pew Research have an unfavorable opinion of Greece in the Spring of 2012 with the share of people that are ready to participate in punishing, using as a proxy the share of people in each country that say they are very likely to call the police if they see a man get his wallet stolen (see Table 1, Panel B). As shown in Figure 3, though based on very few observations, the correlation is clearly positive (0.57), and is thus consistent with this implication.

6. Conclusions

Cultural norms can effect economic outcomes through several channels. In this papers we have highlighted a novel and thus far unexplored channel through which this can happen: culture can act as a conformity constraint on policy makers and this may result, in certain circumstances, in suboptimal outcomes. We show that this is likely to happen when two (or more cultures) have to face each other as when governments of different countries that belong to some economic union are forced to interact. The cultural difference and the different behaviors that each culture commands can result in a political clash. Though policy makers are bound by the cultural norms over which they have no control and that evolve slowly, they can still design common institutions which can temper the effects of the clash. We apply these ideas to shed light on the European sovereign debt crisis triggered by the announcement by the new elected government in the Fall of 2009 that Greece government deficit was much larger than reported by the previous government, which cheated on the budget figures. Besides rationalizing the German/Greek contrast and why Germany has shown resistance to bail Greece out, our model has much more general features regarding the interplay between culture and institutions. In out set the slow moving nature of cultural norms can speed up a process of institutional convergence when the cultural (and political clash) results in particularly costly outcomes. Our model, however, does not study how cultural norms evolve in response to the creation of the new institution and the implication for the long run steady state of the economy, an issue that we leave for future work.

About the desirability of a fiscal union, we have highlighted several conceptual points. First of all, while usually a fiscal union's main role is described to be that of providing insurance through countercyclical regional transfers, a fiscal union performs another important role: it allows to replace multiple authorities subject to cultural clash (through the conformity constraint

or more directly) with a unique new authority, hence facilitating convergence, commitment, and enforcement. Second, an important message of the paper is that the value of a fiscal unification step is greater the higher the cultural heterogeneity.

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