A Multilevel Analysis of the Effects of Perceptions of Justice on the Use of Social Sanctions

Maïva Ropaul*

May 9, 2014

Abstract

This study questions the existence of a substitution effect of the perceptions of the justice system on the use of social sanctions both at individual and country levels. Individual decision to trigger social sanction may be embedded in a group context. Indeed, it could be that country-level variables have an effect on the individual decision to participate to sanctioning activities. Three different group effects are considered: the endogenous effect, the contextual effect and the correlated effect. To adress this issue, an empirical study is conducted using the 2010 data of the European Social Survey (ESS5). The use of social sanctions is measured by a proxy which is the individual decision to boycott. The estimation strategy relies on Shang and Lee (2011), with a two-stage estimator for probit models of endogenous and exogenous group effects, based on the Manski-Brock-Durlauf model (Manski, 1993; Brock and Durlauf, 2001) and Borjas and Sueyoshi (1994). Results indicate that individuals' perceptions of justice have a substitution effect on the use of social sanctions. Whereas country's average perceptions of courts have a substitution effect on individual use of social sanctions, country's average perceptions of police have a complementary effect. This latter result shows different attitudes towards the monitoring and the punishment function of the justice system. Hence, the paper confirms the presence of an endogenous effect. Indeed, the country's behaviors concerning social sanctions have a complementary effect on individuals' decisions to participate to sanctioning activities.

*CRED Paris Center for Law and Economics (TEPP), Université Panthéon - Assas (University of Paris 2), 12 Place du Panthéon, 75005 Paris, France, maiva.ropaul@gmail.com

1 Introduction

How are social sanctions and the legal system related? This simple question has been widely dealt with in the Law and Economics literature, and particularly in the Social Norms and Law literature. This paper makes a contribution to the debate by testing a substitution effect of the perceptions of the justice system on the use of private social sanctions. Traditionally, it is asked whether legal intervention is needed when private enforcement of norms is insufficient. In the current study, the question is whether private enforcement increases when public enforcement of norms is perceived insufficient by citizens. The intuition is that the more an individual believes that the justice system monitors and enforces norms properly, the less he or she needs to trigger private sanctions.

Social norms and Law literature investigates particularly how citizens internalize and enforce social norms (McAdams, 1997; Cooter, 2000; Kandori, 1992), and how these social norms interact with the law (Bénabou and Tirole, 2010, 2011 ; Fehr and Gächter, 2000; Fischbacher and al. 2001; Kübler, 2001; Carbonara and al., 2010). In this perspective, this literature has widely studied how a change in legal obligations and/or legal sanctions can be a substitute or a complement to social sanctions. People are considered to have a willingness to pay to uphold a given norm, if they have internalized this norm (McAdams, 1997; Cooter, 2000). Consequently, those individuals who have internalized a norm punish the potential violators, even if punishment is costly. However, little has been said on the effects of trust and legitimacy of the justice system on the level of the social sanctions. In other words, the question asked in this study is whether individuals who have internalized a norm punish, even if they trust the legal system to uphold the norm.

Individual decision to trigger social sanction may be embedded in a group context. Indeed, it could be that country-level variables have an effect on the individual decision to participate to sanctioning activities. Three different effects are considered: the endogenous effect, the contextual effect and the correlated effect. Endogenous effect means that individual behavior varies with behaviors at country-level. Particularly, the paper tests that the interactions between individuals in a given group are strategic complementarities. That means that the higher is the country's propensity to sanction, the higher is the individual propensity. Contextual effects mean that the individual behavior varies with the exogenous characteristics of the group. In other word, the study considers whether more positive perceptions of the justice system at the country-level

would influence the individual propensity to sanction. Correlated effects refer to the unobserved group characteristics that may influence individual outcomes. It is the idea that individuals act in similar way because they have similar hidden characteristics or face similar institutional environment.

To adress this issue, an empirical study is conducted using the 2010 data of the European Social Survey (ESS5). The use of social sanctions is measured by a proxy which is the individual decision to boycott. This proxy for participation to social sanctioning activities is modelled as a function of both individual and country-level characteristics. The estimation strategy relies on Shang and Lee (2011). They propose a two-stage estimator for probit models of endogenous and exogenous group effects, based on the Manski-Brock-Durlauf model (Manski, 1993; Brock and Durlauf, 2001) and Borjas and Sueyoshi (1993). The first-step is to estimate a probit model with country fixed-effects. The second-step is to use the IV method to estimate endogenous and exogenous group effects via the country fixed-effect estimates.

The next section reviews the studies on the interactions between social sanctions and the justice system in the literature (section 2). A brief literature review is also provided on the measure of perceptions of the justice system (section 3). Then, the data are presented, followed by a detailed description of the identification strategy (section 4). Section 5 shows the results of the study as well as the robustness checks. In section 6, I discuss the results and conclude.

2   Interactions between social sanctions and the justice system

The aim of this section is to define more precisely what is a social sanction, and how the relations of the social sanctions with the justice system have been dealt with in the literature. Then, justifications are given for the use of boycott as proxy for participation to sanctioning activities.

2.1   Social sanctions

Social sanctions are the external incentives that sustain social norms. Social norms differ from legal rules because they are rules of behavior enforced not by courts but by other forces (Stout,2001). That is to say that a private person

sanctions the violator of a norm, whereas a state actor sanctions the violator of a legal rule. Cooter (1997) highlights that social norms correpond to a consensus in a community concerning what people ought to do. The obligation associated to the social norm partitions the set of possible actions into permitted and forbidden zones. Thus, norms are the informal social regularities that individuals feel obligated to follow, because of an internalized sense of duty, or because of the fear of external non legal sanctions or both (McAdams, 1997).

Consequently, social norms rely on two types of motives, which are intrinsic and extrinsic motives. Intrinsic motives mean that someone care about his or her self-image, and to deviate from a given norm would make him or her feel guilt, resulting in a loss in utility (McAdams and Rasmusen,2004 ; Elster,1989, 2009). These intrinsic motives appear when someone has internalized the norm. Moreover according to Cooter (1997) when one has internalized a norm, he is willing to pay a cost to uphold the norm ie. he wants to punish norms-violators even if punishment is costly. Consequently, internalization is a determinant of the individual decision to use social sanction. Internalization is therefore included in the empirical analysis as an explanative variable for the participation to sanctioning activities.

External motives come from the preference for social approval (or esteem), and the resulting loss in utility in case of social disapproval. People do care about social signalling and are willing to pay a cost to signal they belong to the "good type". Bernheim (1994) shows that individuals want to signal that their tastes are close to the mainstream. On the contrary Corneo and Jeanne (1997) show that individuals want sometimes to signal an extrem taste, for instance they want to seem as altruistic as possible. Hence, social sanctions are the means by which social disapproval is expressed.

It can be that legal and social sanctions may be both triggered for a given misconduct. In fact, legal rules can rely on pre-existing social norms. In this case, the question is whether legal and social sanctions are complement or substitutes.

2.2   Social sanctions and justice system

Considerations on the interactions between social sanctions and justice system have focused on the effect of law, and particularly the level of legal sanctions, on the magnitude of social sanctions. The legal rules are shown to have an effect on the social sanctions. However, this effect can be either positive or negative. For instance, the theory of expressive law shows that law helps to create a fo-

cal point. Law provides an instrument for changing social norms by expressing commitments to certain social values (Cooter 1997, 2000; Kahan, 1998; Bohnet and Cooter, 2011). In particular when social norms form a multiple equilibria, expressing a commitment gives a focal point and creates a change in the equilibrium. First, expressive law contributes to express social values, at last it provides information about compliance of others with the norm. Interestingly, law can have an effect without deterrent sanctions. Thus, the theory of expressive law shows how to create or destroy a social norm without changing individual preferences .

Legal rules can sometimes impede social norms. Accordingly, Fehr and Falk (2002) note that "*rewarding people monetarily for obeying social norms may weaken norm enforcement and may, hence, lead to a gradual erosion of normguided behaviour*". So, a reason why legal rules are sometimes substitutes to social norms, is that they may crowd-out esteem-based incentives (Bénabou and Tirole, 2006, 2011). Bénabou and Tirole provide an other explanation for this fact. They show that observers cannot tell with precision if compliance to a norm is driven by material incentives or by the propensity of the cooperator to belong to the "good type". Consequently, material incentives can decrease approval incentives.

However, theese previous studies do not investigate the broader issue of the effect of the perceptions of the justice system on the social sanctions. In that sense, the current paper is more related to the theory of inexpressive law (Carbonara et al., 2011), which shows how individuals' perceptions of new legislations affect social sanctions. In this perspective, the legal system can be perceived as too lenient or too severe by citizens, and they adjust their level of private sanctions consequently. Legal rules that depart to much from the social norms are likely to fail in their expressive function and could also lead to backlash effects . If a legal rule is perceived as unfair because it is too excessive or too lenient, people could substract or add social sanctions, which can delete the anticipated effects of the law. For example, the law may be perceived as excessive if it condamns a behavior which seems harmless or desirable by the population.
Nevertheless, this theory of inexpressive law focus on the effect of the legislation on private enforcement, and it does not take into account the effects of the individuals' perceptions of the public enforcement of norms.

2.3 Boycott as a measurement of the use of social sanctions

A major issue of the study concerns the measure of the dependent variable, namely the use of social sanctions. I do not intend to measure a specific social norm in this study, but to assess the overall level of social sanctions that an individual may trigger, given his trust in justice and his perceived legitimacy of the justice system. These sanctions can be adressed to an individual or to any legal person that has violated a social norm. The item which is at best related to this broader definition of the social sanction in the European Social Survey is the question on boycott participation, which symbolizes a sanction towards a company for having violated a social norm. The exact wording of the question measuring boycott in the ESS5 is "There are different ways of trying to improve things in [country] or help prevent things from going wrong. During the last 12 months, have you done any of the following? (...)boycotted certain products?". The use of boycott varies greatly among the 26 countries under analysis. The empirical study developped latter in the paper test whether these differences in boycott at the country level can be explained by the differences in the country's perceptions of justice.
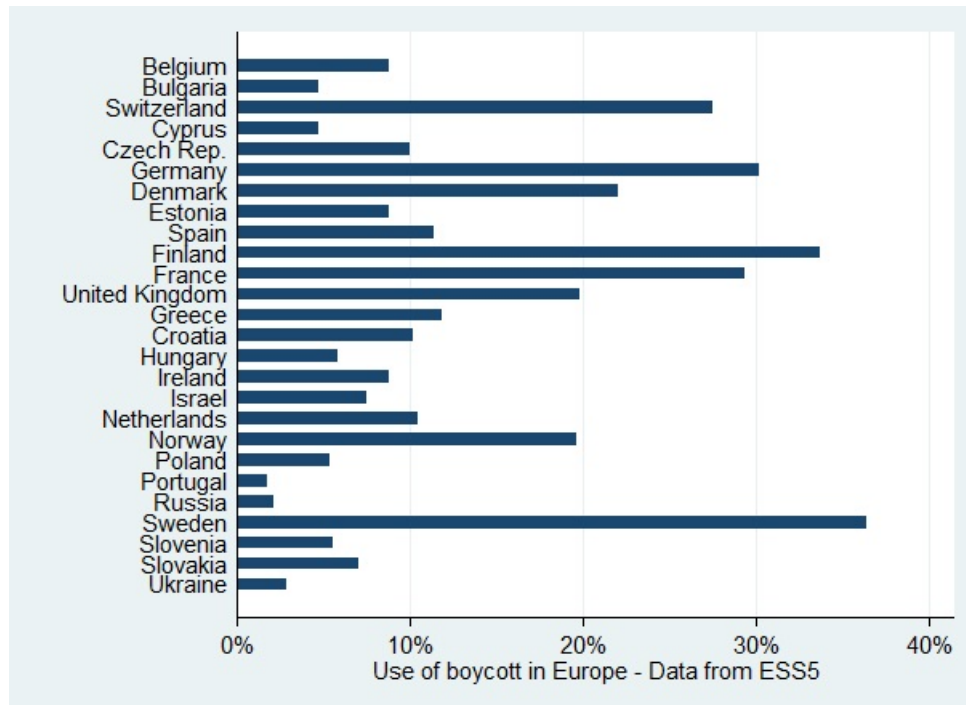

Figure 1: Boycott in Europe

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Boycott can be classified as a social sanction. Indeed, it is somewhat similar to ostracism. Indeed, boycotts are the individual or concerted refusal to buy (Tyran and Engelmann, 2005), which leads to ban the targeted firm from the group of the potential exchange partners. Deffains and Ropaul (2013) argue that boycott, understood as a social sanction, is a way to control corporate behavior.

Nevertheless, boycotts are analyzed by sociologists and political scientists as a form of political consumerism, which is the use of individual consumption choices as a form of civic engagement and a means of inducing social change (Neilson and Paxton, 2010) . Empirical studies indicate that the development of political consumerism might signal the increased distrust of citizens in the political system and its ability to trigger political change (Stolle and al., 2005). Social capital is also a strong determinant of political consumerism. Indeed, involvement in associations makes it easier for citizens to learn to overcome collective action problems, and facilitates recruitment for political participatory acts (Stolle and al. 2005, Hooghe and Stolle, 2003; Putnam, 1993, 2000; Almond and Verba, 1963; Newman and Bartels, 2011).

The very existence of boycotts is puzzling from a standard economics perspective. Under a utilitarian approach, if boycott is considered as an instrument to induce social change and/ or better environmental quality, this phenomenon should not occur. Indeed this behavior is costly: products with a better compliance to norms or with a higher social and environmental performance are more expensive. If the intrinsic utility derived from consumption of "unlawful product" is perceived to be the same as for "lawful product", that means that the individuals pay a higher price for a product which is technically equivalent. Moreover, there is a small agent problem, that is to say that each individual taken separately has a very small impact on corporate behavior. Finally, there is a free-rider problem, because of the possibility of enjoying the benefits without bearing the costs of green purchase. Despite these theoretical drawbacks, it is clear that the phenomenon exists, given the percentage of respondents declaring having boycotted. Can we think about some psychological gains that may counterbalance the costs of boycotts? Several economic theories can be used to give a non-instrumental explanation of green consumerism.

For instance, theories of product differentiation indicate partly why the consumers have a willingness to pay for lawful products. In the Lancasterian approach, a consumer can have a taste for the environmental quality, ethical processes, etc. In the vertical differentiation approach, lawful products may be perceived to be correlated to a higher technical quality.

Considering that lawful products are private goods linked to an indirect contribution to a public good, green consumerism is directly related to the question of the voluntary contribution to public goods. Theories of other-regarding preferences can be used to explain those voluntary contributions (see for impure altruism explanations Andreoni, 1989, Hainmueller and al., 2009; Richardson and Stahler, 2007; Baron, 2009; and for pure altruism explanations Fehr and Schmidt 2006).

Consumption choices can also be studied with social norms theories such as the peer effect models, the signaling models and the theories of third-party enforcement of social norms. In the peer effect models the boycott behavior is influenced by the behavior of others. In the signaling models, consumption and boycott allow to signal one's type. The literature on conspicuous consumption (see Bernheim, 1994; Corneo and Jeanne, 1995) shows that the purchase decisions can be aimed at signaling a characteristic which is valued in society, when individuals have status concerns. However, in this previous literature, the consumers were supposed to signal their level of wealth. With boycotts, individuals may signal their level of altruism, if this characteristic is valued in the society. This intuition has been investigated by Bénabou and Tirole (2006) for the prosocial behavior spoken generally. Finally, the models of third-party enforcement of social norms indicate that a consumer who has internalized a norm may reward or punish a firm because it has succeed/failed in meeting with the considered norm.

The present paper focuses on the third-party enforcement explanation of boycott, as I consider boycott being a mean to punish the unlawful firms. The diversity of explanations for the existence of boycotts may arise issues for the use of boycott participation as a measurement of the propensity to informally punish.

There are some possible drawbacks for the use of boycotts as a measurement of the propensity to use informal punishment. First of all, propensity to boycott is not necessary equivalent to the propensity to use informal punishment. Informal sanctions take several forms, and nothing can be said on the link between one's propensity to punish and its preferences for the different forms of punishment. Thus the conclusions of this paper are constrained and the available results are only significative for this particular form of informal punishment that is boycott. Moreover, the plurality of theoretical explanations of boycott indicate that there are multiple variables that can explain this behavior. Consequently, the estimation of the effect of justice perception controls for these potential determinants of boycott, which are social capital and socio-demographic variables.

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3   Measurement of the perceptions of the justice system

Broadly defined, legitimacy is the right to govern and the recognition by the governed of that right (Jackson and al., 2011; Beetham, 1991; Bottoms and Tankebe, 2012; Coicaud, 2002; Tyler and Fagan, 2008). As a matter of fact, feeling of obligation is a main feature of the empirical literature on the legitimacy of the justice system (Kochel, Parks and Mastrofski, 2011; Reisig and Lloyd, 2009; Sunshine and Tyler, 2003; Tyler and Fagan, 2008; Tyler and Huo, 2002; Tyler, Schulhofer and Huq, 2010). Despite the proeminence of the perceived obligation to obey in defining and operationalizing legitimacy, a substantial part of the literature argues that legitimacy has to be considered as a multidimensional concept (Beetham, 1991; Coicaud, 2002; Jackson and al.2011; Hough and al., 2013).

To measure the individuals' perceived legitimacy of an institution, one can measure three-different sub-indicators. The first one is a measure of consent to power. It relies on the idea that the governed offer their willing consent to defer to the institution resulting in the feeling of an obligation to obey the institution. Legality of the power is the second indicator of interest. It is the belief that the power is acquired and exercised in accordance with established rules, which leads to a perceived lawfulness of the actions of the institution. Finally, normative justifiability can also be considered as a sub-dimension of perceived legitimacy. Normative justifiability is observed if there is a moral alignment between the institution and the governed, meaning that the institution shares the moral values of the governed.

Given this operationnalization of legitimacy in the literature, the major challenge here is to assess if such a decomposition of justice legitimacy is valid, given the data at our disposal. To check this, I use a factor analysis, which details are given in appendix.

Since the seminal work by Tyler (1990), legitimacy of the justice system has been studied as an alternative explanation of legal compliance (LaFree, 1998; Nivette, 2012; Nivette and Eisner, 2012), while previous researchers focused mainly on the deterrence effect of civil and criminal sanctions (Klepper and Nagin, 1989; Shavell 1985, 1987; Sherman, 1993). Another trend in the literature is to assess the effect of empirical legitimacy on the level of cooperation with the justice system (Murphy and Cherney, 2012; Reisig and Lloyd, 2009; Sunshine and Tyler, 2003; Tyler, Schulhofer and Huq, 2010).

If justice legitimacy is proved to have an effect on the propensity to abide by

the law, the question raised is whether this perception of the justice system has also an impact on the individuals' relationship with the informal rules and their counterpart, which is social sanctioning. Besides, trust in justice has also been investigated as a prominent determinant of individuals' compliance with the law. Thus, this other perception of the justice system can also be included in the study.

The notion of trust refers to the expectations that one has upon other individuals or upon institutions. These expectations allow to remove possible events and reduce uncertainty regarding the motives, intentions and future actions of individuals or institutions. This ability to believe that others will behave in predictable ways is particularly crucial when one's interests depend on the actions of the concerned individuals or institutions (Barber, 1983; Luhmann,1979; Tilly, 2005).

Trust in justice can be considered as a predictive variable of justice legitimacy (Jackson and al.2011; Hough, 2013). It can be represented as an additive function of three dimensions being trust in justice effectiveness, trust in justice procedural fairness and, trust in justice distributive fairness. It is verified if such a decomposition of trust can be applied with this data set, using factor analysis (see appendix).

4 Data and identification strategy

4.1 Data

4.1.1 Summary statistics

The study is based on cross-section data from the European Social Survey of 2010 (ESS5). The European Social Survey (ESS) is an academically driven cross-national survey which is conducted every two years across Europe since 2001. This is a multi-level dataset combining observations both at the individual and the country level. ESS5 covers 26 different countries, which are Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Israel, Netherlands, Norway, Poland, Portugal, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine and the United Kingdom.

Data are complete for 19834 individuals in these 26 different countries, given the variables that are used in the regressions. For these individuals, about 20% of the respondents have declared having boycotted a product or a firm during

the last 12 months preceding their interview. This percentage of individuals participating to this particular sanctionning activity gives enough observations to carry further analysis. In the following paragraphs, I describe more in depth how these different variables are constructed. The table 1 displays the weighted means for each individual variable used, which represent average characteristics for the countries under analysis.

Table 1: Summary statistics for individual level variables

Variable	Obs	Mean	Std. Dev.	Min	Max
boycott	19834	.2017248	.4012979	0	1
Ijustice	19834	-.4280083	13.61776	-54.99736	44.72194
court1	19834	-.0053497	.7740048	-2.860828	2.243283
court3	19834	.0001228	.6453308	-2.741858	1.86646
pol1	19834	-.0174775	.8599888	-3.61261	2.461857
pol2	19834	-.0826803	.8727917	-2.631984	1.998876
contact	19834	.38808	.4873252	0	1
internalization	19834	-.5519499	2.363262	-8.650482	2.944108
generalized trust	19834	15.35376	5.291998	0	30
institutional trust	19834	31.33115	13.27074	0	70
involvement in organizations	19834	.1852931	.3885449	0	1
frequency of social meetings	19834	.0220914	.9388671	-2.429292	1.317773
religiousity	19834	-.4127622	2.508513	-3.582355	6.200395
political interest	19834	.1995223	.9725469	-1.463289	1.808065
female	19834	.482877	.4997193	0	1
age	19834	45.65976	16.96327	14	96
household net income	19834	5.772566	2.762864	1	10
education	19834	13.18367	3.755156	0	50
paidwork	19834	.586509	.4924717	0	1
unemployment	19834	.0693942	.2541297	0	1
retired	19834	.2067206	.4049636	0	1
left-right scale	19834	4.973159	2.057725	0	10

Three groups of variables are used at individual-level, which are the perceptions of justice, the social capital and the socio-demographic variables. Concerning perceptions of justice, Ijustice is a composite index grouping perceptions on courts and police. Court1 is a factor representing trust in courts, and court3 corresponds to the consent to the power of courts, a sub-dimension of perceived legitimacy. Similarly, pol1 concerns trust in police and pol2 the consent to the power of police.

At country-level, variables related to perceptions of justice, generalized trust and institutional trust are strongly correlated. Thus, the simultaneous integration of these variables in a linear regression can cause multicollinerarity.

Table 2: Cross-correlations

Variables	Ijustice	court1	court3	pol1	pol2	contact	internalization	generalized trust	institutional trust	involvement	social meetings	religiosity	political interest	female	age	household's total net income	education	paid work	unemployment	retired	left-right
Ijustice	1.000																				
court1	0.729	1.000																			
court3	0.320	0.029	1.000																		
pol1	0.670	0.423	0.144	1.000																	
pol2	0.479	0.279	0.178	0.066	1.000																
contact	-0.004	0.035	-0.112	-0.008	0.039	1.000															
internalization	0.211	0.088	0.199	0.164	0.150	-0.083	1.000														
generalized trust	0.379	0.404	-0.050	0.251	0.197	0.012	0.100	1.000													
institutional trust	0.591	0.571	0.059	0.368	0.282	0.027	0.093	0.486	1.000												
involvement	0.125	0.177	-0.071	0.093	0.092	0.127	0.027	0.144	0.172	1.000											
social meetings	0.084	0.137	-0.068	0.047	0.060	0.095	-0.028	0.172	0.164	0.124	1.000										
religiosity	0.052	-0.053	0.152	0.033	0.012	-0.082	0.153	-0.042	-0.010	0.009	-0.049	1.000									
political interest	0.138	0.173	-0.006	0.114	0.094	-0.132	0.092	0.156	0.248	0.214	0.058	0.173	1.000								
female	-0.031	-0.070	0.006	-0.024	-0.020	-0.179	0.095	0.08	-0.019	-0.083	0.004	0.166	-0.143	1.000							
age	0.090	-0.021	0.144	0.132	0.021	0.087	-0.013	0.040	-0.012	0.022	-0.215	0.173	0.154	-0.011	1.000						
household's total net income	0.119	0.156	-0.030	0.073	0.087	0.134	-0.001	0.142	0.160	0.107	0.092	-0.110	0.170	-0.076	-0.179	1.000					
education	0.077	0.166	-0.109	0.046	0.071	0.113	-0.063	0.152	0.131	0.162	0.093	-0.093	0.208	0.018	-0.225	0.316	1.000				
paid work	0.050	0.110	-0.078	0.028	0.053	0.164	-0.057	0.068	0.072	0.061	0.042	-0.134	0.046	-0.076	-0.302	0.369	0.276	1.000			
unemployment	-0.091	-0.090	-0.017	-0.067	-0.057	0.01	-0.050	-0.089	-0.091	-0.050	-0.029	0.002	-0.069	-0.010	-0.118	-0.187	-0.039	-0.296	1.000		
retired	0.032	-0.062	0.131	0.055	-0.005	-0.174	0.153	-0.013	-0.029	-0.008	-0.118	0.140	0.083	-0.013	0.691	-0.238	-0.233	-0.576	-0.144	1.000	
left-right scale	0.130	0.053	0.050	0.080	0.083	0.024	0.044	0.044	0.120	0.003	0.009	0.118	0.015	-0.034	0.029	0.076	-0.008	0.025	-0.051	0.021	1.000

Variables	Average country-level boycott	Ijustice	court1	court3	pol1	pol2	generalized trust	institutional trust	social meetings	involvement	political interest	religiosity
Average country-level boycott	1.000											
Ijustice	0.663	1.000										
court1	0.654	0.917	1.000									
court3	-0.368	-0.456	-0.490	1.000								
pol1	0.613	0.881	0.717	-0.518	1.000							
pol2	0.519	0.757	0.770	-0.131	0.467	1.000						
generalized trust	0.666	0.837	0.860	-0.682	0.731	0.603	1.000					
institutional trust	0.659	0.905	0.917	-0.517	0.766	0.695	0.893	1.000				
social meetings	0.364	0.347	0.349	-0.474	0.440	0.299	0.497	0.388	1.000			
involvement	0.772	0.740	0.736	-0.569	0.673	0.580	0.773	0.820	0.461	1.000		
political interest	0.604	0.584	0.677	-0.347	0.481	0.426	0.686	0.706	0.350	0.588	1.000	
religiosity	-0.404	-0.303	-0.320	0.365	-0.228	-0.189	-0.526	-0.458	-0.259	-0.385	-0.420	1.000

Table 3: Correlations matrix for country-level variables

4.1.2 Perceptions of the justice system

To measure the perceptions of the justice system, two strategies are adopted. First, I construct a composite index for these perceptions, called Ijustice. This is an average score of standardized items on perceptions of courts (questions d26-d37) and police (questions d9-d25).

The second strategy is to do an exploratory factory analysis (EFA) on the items related to justice perceptions, in order to construct statistically valid subdivisions of the perceptions of justice. The details of the EFA are given in the appendix.

I use the questions d9-d25 which measure trust in police and the perceived legitimacy of police, as well as the questions d26-d37 which measure the perceptions on courts.

Table 4: Overview of the variables in the Justice module of ESS5

Number	Variable	Question
d1	insclwr	how wrong to make exaggerated or false insurance claim
d2	bystlwr	how wrong to buy something that might be stolen
d3	trfowr	how wrong to commit traffic offence
d4	insclct	how likely to get caught if made exaggerated or false insurance claim
d5	bystlct	how likely to be caught if bought something that might be stolen
d6	trfoct	how likely to be caught if committed traffic offence

Number	Variable	Question
d7	plcjbcn	police doing good or bad job in country
d8	plccont	approached, stopped or contacted by police last 2 years
d9	plcstf	how satisfied with treatement from police when contacted
d10	plcvcrp	how police treat victims of crime: rich/poor
d11	plcvcrc	how police treat victims of crime: different races/ethnic groups
d12	plcpvcr	how successful police are at preventing crimes in country
d13	plccbrg	how successful police are at catching house burglars in country
d14	plcarcr	how quicly would police arrive at a violent crime scene near to where you live
d15	plcrspc	how often do police treat people in country with respect
d16	plcfrdc	how often do police make fair, impartial decisions
d17	plcexdc	how often do the police explain their decisions and actions when asked
d18	bplcdc	duty to: back decisions made by police, even if disagree
d19	doplcsy	duty to: do what police say, even when don't understand or agree

Number	Variable	Question
d20	dpcstrb	duty to: do what police say, even if treated badly
d21	plcrgwr	police have the same sense of right and wrong as me
d22	plcipvl	police stand up for values that are important to people like me
d23	gsupplc	I generally support how the police act
d24	plciplt	decisions and actions of police unduly influenced by political pressure
d25	plccbrb	how often do police in country take bribes
d26	ctjbcnt	courts doing good or bad job in country
d27	ctmtgfr	how often the courts make mistakes that let guilty people go free
d28	ctfrdc	how often the courts make fair, impartial decisions based on available evidence
d29	wraccrp	more likely to be found guilty: rich or poor falsely accused of crime
d30	wraccrc	more likely to be found guilty: two people from different race/ethic groups falsely accused of crime
d31	jdgcbrb	how often judges in country take bribes
d32	ctprpwr	courts protect rich and powerful over ordinary people
d33	hrshsnta	people who break the law much harsher sentences

Continued on next page

Number	Variable	Question
d34	dbctvrd	everyone's duty to back the court's final verdict
d35	lwstrob	all laws should be strictly obeyed
d36	rgbrklw	doing the right thing sometimes means breaking the law
d37	ctinplt	the courts' decisions are unduly influenced by political pressure
d38	stcbg2t	which sentence: 25 year old male, house burglary, second time
d39	tmprs	how long should he spend in prison
d40	caplcst	how likely to call police if you see a man get his wallet stolen
d41	widprsn	how willing to identify person who had done it
d42	wevdc	how willing to give evidence in court against the accused
d43	flsin5y	how often made an exaggerated or false insurance claim last 5 years
d44	bstln5y	how often bought something that might be stolen last 5 years
d45	troff5y	how often committed a traffic offence last 5 years

Concerning the police, 4 factors are retained.

- Factor 1 : General measure of trust in police. The higher this factor is, the more the individual thinks that police does a good job and is not corrupted. Moreover, the factor is also correlated to the aligment of personal values with the values of the police.

- Factor 2: This factor measures the consent to the authority of police

- Factor 3: This factor is related to trust in efficiency in prevention and monitoring.

- Factor 4: This factor measures trust in police fairness, either distributive or procedural.

Concerning the courts, 3 factors are retained

- Factor 1 : General measure of trust in courts. The higher the factor is, the more the individual believes that courts are not corrupted, and that they make fair decisions allowing to punish guilty people.

- Factor 2: This factor is more related to the trust in impartiality of courts.

- Factor 3: This factor represents the consent to obey to law and courts.

For further analysis, I use factor 1 and 3 for courts, and factors 1 and 2 for police, which allow to distinguish the effect of trust and legitimacy of courts and police. Indeed, the other factors describe particular dimensions of trust.

Perceptions of justice system may vary given that an individual has been in contact with the police. This is why the variable "contact" is included (question d8). This is a dummy variable which value is 1 if the individual has been approached, stopped or contacted by police during the last 2 years, and 0 otherwise.
A variable describing the degree of internalization of norms sustained by the legal system is also included. The variable "internalization" is the average mean of standardized items related to questions d1, d2 and d3. It describes to what extent the individual thinks it is wrong to commit wrongdoings.

4.1.3   Social capital and socio-demographic variables

Variables of interest also include measures of social capital. The six variables that measure social capital here are the generalised trust, institutional trust, frequency of social meetings, involvement in organizations religiosity and political interest.
Generalised trust is the addition of three 10-point Likert scale variables. The first one is "ppltrst", which asks of "most people can be trusted or you can't be too careful". The second is "pplfair", which asks if "most people try to take

advantage of you, or try to be fair". The third one, "pplhlp" asks whether "most of the time people are helpful or mostly looking out for themselves".The higher the index is, the more one trust other people.

Institutional trust is the addition of seven 10-point Likert scale. Each item indicate how much the respondent personally trust each of the following institutions: parliament, the legal system, the police, politicians, political parties, the European Parliament, and the United Nations. The higher the index is, the more one trusts institutions.

A summated scale that measures degree of religiosity is constructed by adding together these variables, after standardization, as they have different Likert-scales: "rlgdgr" which is "how religious are you?", rattend which is "how often do you attend religious services apart from special occasions?", and "rpray" which is "how often do you pray apart from at religious services?".

Involvement in organizations is a dummy which value is 1 if the individual work in an association, a political party or both.

Frequency of social meeting results from the standardization of the 6-point Likert scale asking how often one socially meets with friends, relatives or colleagues.

Measure of political interest results from the standardization of "polintr" , a 7-point Likert scale, which is the answer to the question asking "how interested would you say you are in politics".

Socio-demographic variables include the gender of the respondent, age, the household net income (in decile), years of education, and dummies describing if the respondent has currently a paid work, or if he or she is unemployed or retired. A variable measuring self-location on the left-right political scale is also provided, in order to measure the political opinions of the respondent. The value of this variable increases when the individual locates himself or herself on the right wing.

4.2 Identification strategy

The aim of the paper is to estimate a binary choice model with social interactions. Indeed, the dependent variable "boycott" equals 1 if one has used boycott during the last 12 months and 0 otherwise. This decision to participate to a sanctioning activity is supposed to depend on both individual and group characteristics. Binary choice models with social interactions have been studied in details by Manski (1993), Borjas and Sueyoshi (1994), Brock and Durlauf (2001a, 2001b, 2007) and Shang and Lee (2007).[1] I particularly rely on Shang and Lee's specification of a two-step estimation of individual and group effects.

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[1] For an extensive survey of models with social interactions, see Blume et al., 2010.

The model to estimate is the following

$$Y_{ri}^* = x_{ri}\delta + s_r\beta_1 + E_r(x)\beta_2 + E_r(Y)\beta_3 + u_r + \epsilon_{ri} \tag{1}$$

with Y_{ri}^* the latent dependent variable for individual $i = 1, ..., m_r$ in group r, x_{ri} a vector of individual characteristics, s_r a group specific observables including the constant intercept, $E_r(x)$ is the exogenous group effect or contextual effect, $E_r(Y)$ is the endogenous group effect or expected average behavior in the group, u_r represents the unobserved group variables, and ϵ_{ri} is the error term. If $Y_{ri}^* > 0$ then $Y_{ri} = 1$, else $Y_{ri} = 0$. u_r and ϵ_{ri} are independent of x_{ri}. $E(u_r) = 0$, and u_r is i.i.d. across groups. ϵ_{ri} is normally distributed (N(0,1)) and i.i.d. u_r and ϵ_{ri} are independent.

The endogenous group effect $E_r(Y)$ measures the influences of group behaviors on individual behaviors. In the present case, endogenous group effect means that the expected country-level boycott influences the individual decision to boycott. When the group characteristics affect individual behavior, Manski (1993) indicate that the estimation of the endogenous effect suffers from a reflection problem in the linear-in-means model. Brock and Durlauf (2001a, 2001b, 2007) note that identification is possible in the discrete choice model as $E_r(Y)$ becomes a non-linear function of individual and group characteristics. They consider the following model

$$Y_{ri}^* = x_{ri}\delta + s_r\beta_1 + E_r(x)\beta_2 + E_r(Y)\beta_3 + \epsilon_{ri}$$

with no unobserved group variables, and ϵ_{ri} is distributed according to the logistic function. Hence, $E_r(Y)$ is defined under the assumption of rational expectation, and depends on the parameter to be estimated. Indeed, $E_r(Y)$ becomes

$$E_r(Y) = \frac{1}{m_r}\sum_{i=1}^{m_r} tanh(x_{ri}\delta + s_r\beta_1 + E_r(x)\beta_2 + E_r(Y)\beta_3)$$

Consequently, to apply the Manski-Brock-Durlauf model a maximum likelihood iterative procedure is needed. The first step consists to give an initial guess for parameters, say $\hat\alpha_0$ and to compute $E_r(Y|\hat\alpha_0)$. The latter is plugged into the LL function. The maximum likelihood estimation will give a new estimation for the parameters $\hat\alpha_1$, allowing to compute $E_r(Y|\hat\alpha_1)$. Steps are iterated until con-

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vergence, which supposes to find a fixed-point of the endogenous effect equation.

Several problems occur with the Manski-Brock-Durlauf model. This model relies on a unique rational expectation solution for $E_r(Y)$ such that the likelihood function is well defined. In presence of multiple equilibria, a selection mechanism is needed. Misspecification of the selection mechanism may cause inconsistent estimation (Li and Lee, 2006). There is also a misspecification of the error term, as unobserved group variables are not taken into account in the Manski-Brock-Durlauf model (Li and Lee, 2006; Shang and Lee, 2007).

To remove these problems, Shang and Lee (2007) have proposed a two-step IV estimator of social interactions, based on the Manski-Brock-Durlauf model and Borjas and Sueyoshi's probit model with only endogenous effect. They indicate that with large group size, the observed average behavior in the group may be used as an approximation of the endogenous effect variable $E_r(Y)$. [2]

The first step is a probit estimation of the individual behavior rewritten as

$$Y_{ri}^* = x_{ri}\delta + \alpha_r + \epsilon_{ri} \tag{2}$$

with

$$\alpha_r = s_r\beta_1 + E_r(x)\beta_2 + E_r(Y)\beta_3 + u_r$$

α_r is a country dummy variable. If m_r is large, α_r can be consistently estimated using probit model with country-fixed effects.

The second step is a linear regression of the following equation

$$\hat{\alpha}_{rm} = s_r\beta_1 + \hat{E}_{rm}(x)\beta_2 + \hat{E}_{rm}(Y)\beta_3 + u_r + v_{rm} \tag{3}$$

with $\hat{E}_{rm}(Y)$ the average observed behavior in the group, $\hat{E}_{rm}(x)$ the average of the individual characteristics in the group. Instrumental variables are needed, because $cov(E_r(Y), u_r) \neq 0$ induces $cov(\hat{E}_{rm}(Y), u_r) \neq 0$. We have $v_{rm} = (\hat{\alpha}_{rm} - \alpha_r) - (\hat{E}_{rm}(x) - E_r(x))\beta_2 - (\hat{E}_{rm}(Y) - E_r(Y))\beta_3$, which is the

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[2]They also give an alternative which is the average expected individual behavior of group members, but both are proved to be good approximation of the true endogenous variable in both single equilibrium and multiple equilibria models.

measurement error. As group size tends to infinity, v_{rm} tends to zero.

To instrument $E_r(Y)$ I use the set of IVs provided by Shang and Lee (2007), which are:

$$w_{1,rm} = \frac{1}{m_r} \sum_{i=1}^{m_r} \phi(x_{ri}\hat{\delta} + \hat{\hat{\alpha}}) \tag{4}$$

$$w_{2,rm} = (\bar{x}_{1,rm} - \bar{\bar{x}}_1)\frac{1}{m_r} \sum_{i=1}^{m_r} \phi(x_{ri}\hat{\delta} + \hat{\hat{\alpha}}) \tag{5}$$

5 Results

5.1 Baseline model

This first table of regression indicates the marginal effects at means from the probit estimation at the individual-level. Equation (1) represents a regression on pooled data with cluster robust standard errors. Thus, this approach controls for the within-country correlation. The correlation structure among individuals within countries is controlled, but there is no explicit modelling of country-level effects on individual behavior. Consequently, equation (1) does not allow to measure the group effects, and results may be biased by an omitted variable problem. Equation (2) is the estimation of the first-step equation of the model, with robust standard errors. It estimates the individual-level coefficients, including the country fixed-effect.

Equation (2) confirms the hypothesis of a substitution effect of the perceptions of justice on the use of social sanctions. Indeed, the composite index "Ijustice" is significant and negative. Estimation of model (1) however indicates that this variable has no effect. This difference in results come from the inclusion of country-effects in model (2). Indeed, without group effects the unexplained variability may be too high to see the effect of Ijustice.

The same conclusion can be made for generalised trust, which is non significant in model (1) and significant in model (2), with a positive influence on the decision to boycott. Results of model (2) concerning this variable are consistent with previous literature on the matter.

Other variables characterizing the relationship of an individual with the justice system have also significant effects on the dependent variable. Indeed, contact and internalization are significant and have positive marginal effect in both models. Those who have been contacted by the police boycott more. Besides, people who have a high degree of norm internalization have a higher propensity to use social sanctions. This latter effect is consistent with Social norms and Law theories, as individuals with high degree of norm internalization are supposed to have a higher willingness to pay to enforce norms.

Trust in institutions has a substitution effect. The fact that both Ijustice and trust in institutions are significant indicate that perceptions of justice have a separate effect from perceptions of institutions generally spoken at the individual level.

Other components of social capital have a positive effect on social sanctions. Indeed, generalised trust, involvement in associations, frequency of social meetings and political interest have significant and positive coefficients - which is consistent with the previous literature.

Table 5: First step probit regression on individual characteristics

VARIABLES	Cluster robust standard errors (1) Marginal effects	Country-fixed effects (2) Marginal effects
Perceptions of justice		
Ijustice	0.004	-0.011***
	(0.003)	(0.001)
Contact	0.110***	0.144***
	(0.031)	(0.024)
Internalization	0.024**	0.013**
	(0.012)	(0.006)
Social capital		
Generalized trust	0.002	0.009***
	(0.003)	(0.003)
Institutional trust	-0.008***	-0.003**
	(0.002)	(0.001)
Involvement in organizations	0.441***	0.323***
	(0.062)	(0.028)
Frequency of social meetings	0.071***	0.058***
	(0.022)	(0.014)
Religiosity	-0.018	-0.001
	(0.014)	(0.005)
Political interest	0.277***	0.225***
	(0.019)	(0.014)
Socio-demographic variables		
Female	0.067*	0.131***
	(0.039)	(0.024)
Age	-0.010***	0.000
	(0.002)	(0.001)
Household net income	-0.015	0.005
	(0.010)	(0.005)
Education	0.003	0.045***

	(1)	(2)
	(0.006)	(0.003)
Paidwork	-0.010	0.066*
	(0.039)	(0.035)
Unemployment	-0.222***	0.038
	(0.065)	(0.054)
Retired	-0.003	-0.035
	(0.065)	(0.050)
Left-right scale	-0.081***	-0.042***
	(0.009)	(0.006)
Country Fixed effects	No	Yes
Observations	19,834	19,834
Chi-2	5054.31	7739.74
dfm	17	42
LL0	-13747.881	-13747.881
LL	-8815.055	-7886.575
N cluster	25	
k	17	43
Correctly classified	81.97%	82.81%

<div align="center">Robust standard errors in parentheses</div>
<div align="center">***$p <0.01$, ** p<0.05, * p<0.1</div>

The second table indicates the results from the second-step of the estimation procedure of group effects. The dependent variable $\hat{\alpha}_r$ is the estimation of the country-effect in equation (2). $\hat{\alpha}_r$ is regressed on country-level variables.

Equation (3) and (4) consider that only the exogenous group effect is present in the model. Equation (3) has multicollineraity-problem. Indeed at the country-level generalised trust, institutional trust and "Ijustice" are strongly correlated. Thus equation (4) measures the contextual effect, with correction of multi-collinearity, by removing the two problematic variables. Other regressions follow the same rationale. Equation (5) considers only the endogenous effect. Finally, I estimate the full model with equation (6).

Equation (5) and (6) confirms the presence of an endogenous effect, with a positive and significant coefficient for the average country-level boycott. Thus, individual behavior is conditionnal to the behavior of others. The more the other individuals in the group sanction, the more one is willing to sanction.

Results for the exogenous group effects are unexpected. In equations (3), (4) and (6), a country-level positive perception of justice has a positive and significant effect on the individual decision to use social sanctions, whereas at the individual-level this variable is shown to have a negative effect. Political interest and involvement of organizations are significant only when they are estimated controlling for the endogenous effect. They both both have a significant and negative effect on the use of social sanctions.

Table 6: Second step linear regression on country-level variables

VARIABLES	(3) $\hat{\alpha}_r$	(4) $\hat{\alpha}_r$	(5) $\hat{\alpha}_r$	(6) $\hat{\alpha}_r$
Endogenous effect				
Average country-level boycott			3.987***	4.590***
			(0.358)	(0.694)
Exogenous effect				
Ijustice at country level	0.069**	0.042**		0.023***
	(0.026)	(0.018)		(0.008)
Generalised trust at country level	-0.093			
	(0.088)			
Institutional trust at country level	-0.013			
	(0.048)			
Frequency of social meetings at country level	0.923	0.827		0.021
	(0.623)	(0.551)		(0.067)
Involvement in organizations at country level	0.733	0.151		-1.156***
	(1.822)	(1.508)		(0.335)
Political interest at country level	-0.637	-0.836		-0.417***
	(0.622)	(0.571)		(0.072)
Religiosity at country level	-0.056	-0.002		-0.005
	(0.085)	(0.066)		(0.012)
Constant	-0.102	-1.855***	-2.453***	-2.361***
	(1.168)	(0.235)	(0.076)	(0.076)
Observations	26	26	25	25
R-squared	0.473	0.437	0.875	0.950
Adj. R-squared	0.267	0.296	0.869	0.934
k	7	5	1	6

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.2 Robustness checks

The table below displays the results of the first-step probit regression when the perceptions of justice are decomposed between trust and legitimacy on the one hand, and police and courts on the other hand. The probit estimation with cluster robust standard errors (equation (7)) show that all the avariables related to

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the perceptions of justice are significant, while they have opposite signs. This explains how the indicator Ijustice appears non significant in equation (1), as the different effects of trust and legitimacy compensate each other. These results differ when country-fixed effects are included in equation (8). Consent to the power of courts and trust in police are both significant and have negative coefficients, whereas trust in courts and perceived legitimacy of police are non significant. Consequently, equation (8) confirms the substitution effect of the perceptions of the justice system for courts legitimacy and trust in police. The variables contact and internalization remain significant and positive, compared to the results of equations (1) and (2). The results concerning the social capital are similar to previous estimations.

Table 7: First step probit regression with decomposition of individual perceptions of justice

VARIABLES	Cluster robust standard errors (7) Marginal effects	Country-fixed effects (8) Marginal effects
Perceptions of justice		
Trust in courts	0.130***	-0.027
	(0.031)	(0.020)
Consent to power of courts	-0.189***	-0.140***
	(0.051)	(0.019)
Trust in police	0.057*	-0.043**
	(0.034)	(0.017)
Consent to power of police	0.093***	0.011
	(0.035)	(0.015)
Contact	0.103***	0.141***
	(0.027)	(0.024)
Internalization	0.026**	0.014**
	(0.011)	(0.006)
Social capital		
Generalised trust	-0.002	0.007***
	(0.003)	(0.003)
Institutional trust	-0.011***	-0.005***
	(0.002)	(0.001)
Involvement in organizations	0.403***	0.319***
	(0.057)	(0.028)

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	(1)	(2)
Frequency of social meetings	0.065***	0.058***
	(0.022)	(0.014)
Religiosity	-0.012	-0.001
	(0.014)	(0.005)
Political interest	0.267***	0.227***
	(0.018)	(0.014)
Socio-demographic variables		
Female	0.085**	0.131***
	(0.042)	(0.024)
Age	-0.008***	0.000
	(0.002)	(0.001)
Household net income	-0.012	0.005
	(0.009)	(0.005)
Education	0.003	0.044***
	(0.006)	(0.003)
Paidwork	-0.006	0.060*
	(0.039)	(0.035)
Unemployment	-0.178***	0.037
	(0.061)	(0.054)
Retired	0.018	-0.032
	(0.063)	(0.050)
Left-right scale	-0.076***	-0.045***
	(0.010)	(0.006)
Country fixed effects	No	Yes
Observations	19,834	19,834
chi2	22563	7815
dfm	20	45
LL0	-13747.881	-13747.881
LL	-8694.08	-7892.1254
N cluster	25	
k	20	46
Correctly classified	82.05%	82.71%

Robust standard errors in parentheses

***$p < 0.01$, ** p<0.05, * p<0.1

The table below indicates the results for the second-step linear regression of estimated country-effects from equation (8) on country-level variables. Equation (6) has shown that Ijustice at country-level has a positive impact on the propensity to boycott. Now, it is possible to separate the different effects of trust, legitimacy, courts and police. The full model estimation is displayed in (12). The results show that trust and legitimacy of courts have a substitution effect at country-level, whereas trust and legitimacy of police have a complementary effect. The fact that Ijustice has a positive coefficient come from the higher influence of perceptions of police compared to courts. These differences at country-level may come from the differences in the functions of police and courts. The role of the police is to monitor misconducts. Police ex-ante prevent wrongdoing, and ex-post they catch the wrongdoers. Whereas courts are in charge of enforcing the legal obligations and sanctions. They decide which sentences are to be applied once wrongdoers are sued. Thus, those results indicate that private and public monitoring are complements, whereas private and public punishments regarding misconducts are substitutes. Note that the perceptions of courts are non significant without the inclusion of the endogenous effect.

Once again, endogenous effect is significant, with a positive effect of the average country-level boycott on the individual decision to boycott.

The role of social capital remains the same as previously. Involvement in organizations and political interest are both significative and negative when the endogenous effect is included in the regression. This effect at country level of social capital is surprising. One expects that higher involvement in organization and political interest induce higher ability to overcome collective action problems and organize. This better ability is shown in the literature on political consumerism to increase the propensity to boycott. However, the current study indicates that a country with a better social capital use less social sanctions. This result may be induced by the fact that a country with better social capital is able to design better legal norms, in the sense that they reflect the values of the individuals in the society. Indeed, a higher degree of involvement in organization and political interest allow to better inffluence the design of the legal and judicial system. Consequently, social sanctions are less needed to be substitutes to legal sanctions.

Table 8: Second step linear regression on country-level variables with decomposition of the perceptions of justice

VARIABLES	(9) $\hat{\alpha}_r$	(10) $\hat{\alpha}_r$	(11) $\hat{\alpha}_r$	(12) $\hat{\alpha}_r$
Endogenous effect				
Average country-level boycott			3.552***	5.081***
			(0.357)	(0.428)
Exogenous effect				
Country's trust in courts	-0.017	-0.395		-0.198*
	(0.566)	(0.448)		(0.115)
Country's perceived legitimacy of courts	-0.651	-0.236		-0.217*
	(0.948)	(0.785)		(0.129)
Country's trust in police	0.951**	0.762**		0.283***
	(0.330)	(0.358)		(0.092)
Country's perceived legitimacy of police	0.930*	0.831		0.386***
	(0.497)	(0.542)		(0.125)
Generalised trust at country level	-0.126			
	(0.101)			
Institutional trust at country level	-0.017			
	(0.045)			
Frequency of social meetings at country level	0.574	0.540		-0.056
	(0.475)	(0.457)		(0.056)
Involvement in organizations at country level	0.097	-0.303		-1.686***
	(1.994)	(1.656)		(0.311)
Political interest at country level	-0.360	-0.535		-0.326***
	(0.507)	(0.558)		(0.093)
Religiosity at country level	-0.088	-0.020		-0.001
	(0.097)	(0.078)		(0.011)
Constant	0.798	-1.631***	-2.256***	-2.201***
	(1.479)	(0.265)	(0.075)	(0.059)
Observations	26	26	25	25
R-squared	0.534	0.483	0.867	0.962
Adj. R-squared	0.224	0.240	0.861	0.940
k	10	8	1	9

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6   Discussion and Conclusion

This paper has studied the influence on the use of social sanctions of the perceptions of justice both at individual and country level. Factor analysis indicates that it is possible to distinguish trust and legitimacy of courts and police. However, more precise decompositions are not statistically reliable given the data at disposal. The study shows that at the individual level, perceptions of justice have a substitution effect on the decision to boycott, particularly the consent to the authority of the courts and trust in police have a negative effect on the propensity to boycott. At country level, perceptions of courts are shown to have a substitution effect, whereas perceptions of police have a complementary effect. This result can be explained by the difference in roles of the police and the courts, divided between monitoring and punishment. Hence, private and public monitoring are complement, whereas private and public punishment are substitutes. The use of social sanction in the reference group has an effect on the individual decision to sanction. The results indicate that the average country-level boycott has a positive effect on the individual propensity to boycott. Estimates of social capital effect show that the higher is the country-level social capital, the more likely the justice system reflects the values of the individuals in the society, resulting in less individually triggered social sanctions. Nevertheless, the study suffers from possible drawbacks. For instance, results are limited to a specific social sanction which is boycott. Other data are needed to have a more accurate view on the links between perceptions of justice and private sanctions. Moreover, the number of country may be insufficient to have consistent estimates of the different group effects. Hence, as further research, it is possible to estimate a multilevel model using the regional level for constructing the reference groups, which will increase the number of groups.

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Appendix

A Factor analysis on items related to the perceptions of the justice system

As shown in table 4, several variables are intended to measure the perceptions of the justice system. It could be that some of the variables measure different aspects of the same underlying factor. Factor analysis attempts to study the pattern of correlations between these variables in order to explain the variance in the observed variables in terms of underlying latent factors. A prior factor analysis grouping perceptions on courts (questions d26-d37) and on police (questions d9-d25) has been made. However, there is poor interpretability of the resulting factors. This has lead to analyze courts and police separately.

A.1 Perceptions of courts

Factor analysis is undertaken on the standardized variables from questions d26-d37. Three procedures have been implemented in order to choose the number of factors to retain, which are the Kaiser rule, the Minimum Average Partial Correlation for Number of Principal Components (MINAP) and Horn's Parallel Analysis (PARAN).

Minap picks the number of components (m) at which fm is minimum. Here, fm is minimum for one factor, with f1= 0.022. For comparison, the Kaiser eigenvalue > 1 rule suggests extracting 3 principal components. Lastly, paran retain factors for which adjusted eigenvalue is superior to 1, which is the case for three components. Given the differences in answers between the different indicators, 3 factors are retained, as this is the number for which interpretability is better.

```
Factor analysis/correlation                    Number of obs    =    32603
    Method: principal factors                  Retained factors =        3
    Rotation: (unrotated)                       Number of params =       30

    ┌─────────────────────────────────────────────────────────────────────┐
    │   Factor   │ Eigenvalue   Difference │    Proportion   Cumulative    │
    ├─────────────────────────────────────────────────────────────────────┤
    │   Factor1  │   2.93621     2.29923   │      0.9081       0.9081       │
    │   Factor2  │   0.63698     0.18797   │      0.1970       1.1051       │
    │   Factor3  │   0.44901     0.31827   │      0.1389       1.2440       │
    │   Factor4  │   0.13075     0.12894   │      0.0404       1.2844       │
    │   Factor5  │   0.00180     0.04580   │      0.0006       1.2850       │
    │   Factor6  │  -0.04399     0.05386   │     -0.0136       1.2713       │
    │   Factor7  │  -0.09786     0.03976   │     -0.0303       1.2411       │
    │   Factor8  │  -0.13761     0.04574   │     -0.0426       1.1985       │
    │   Factor9  │  -0.18335     0.03099   │     -0.0567       1.1418       │
    │   Factor10 │  -0.21434     0.02987   │     -0.0663       1.0755       │
    │   Factor11 │  -0.24421        .      │     -0.0755       1.0000       │
    └─────────────────────────────────────────────────────────────────────┘

    LR test: independent vs. saturated:  chi2(55) = 8.2e+04 Prob>chi2 = 0.0000
```

Figure 2: Unrotated factor analysis on courts related items

A.2   Perceptions of police

Factor analysis is undertaken on the standardized variables from questions d9-d25. Minap suggests picking 2 factors with with f2=0.019. For comparison, the Kaiser eigenvalue > 1 rule suggests extracting 4 principal components. Lastly, paran retain factors for which adjusted eigenvalue is superior to 1, which is the case for 4 components. Given the differences in answers between the different indicators, 4 factors are retained, as this is the number for which interpretability is better.

```
Factor analysis/correlation                        Number of obs     =      32603
    Method: principal factors                      Retained factors  =          3
    Rotation: orthogonal varimax (Kaiser off)      Number of params  =         30
```

Factor	Variance	Difference	Proportion	Cumulative
Factor1	2.36915	1.37757	0.7327	0.7327
Factor2	0.99158	0.33011	0.3067	1.0394
Factor3	0.66147	.	0.2046	1.2440

```
    LR test: independent vs. saturated:  chi2(55) = 8.2e+04 Prob>chi2 = 0.0000
```

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
zctjbcnt	0.6333	0.1162	0.1385	0.5662
zctmtgfr	0.6192	0.0901	0.0591	0.6051
zctfrdc	0.5588	0.1271	0.0747	0.6660
zcourtrich~r	0.3182	0.6028	0.0496	0.5329
zcourtrace	0.1703	0.5387	0.0819	0.6741
zjdgcbrb	0.6804	0.1781	0.0009	0.5054
zctprpwr	0.5977	0.4176	-0.0714	0.4633
zdbctvrd	0.1491	0.0378	0.4911	0.7352
zlwstrob	-0.0344	0.0425	0.5476	0.6972
zrgbrklw	0.0531	0.1248	0.2787	0.9039
zctinplt	0.5439	0.2745	-0.0158	0.6285

Figure 3: Rotated factor analysis on courts related items

```
Factor analysis/correlation                    Number of obs     =      31404
    Method: principal factors                  Retained factors  =          4
    Rotation: (unrotated)                       Number of params  =         62
```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	5.57614	4.20527	0.7663	0.7663
Factor2	1.37087	0.81663	0.1884	0.9547
Factor3	0.55424	0.10484	0.0762	1.0309
Factor4	0.44941	0.12892	0.0618	1.0926
Factor5	0.32049	0.19173	0.0440	1.1367
Factor6	0.12876	0.11484	0.0177	1.1544
Factor7	0.01391	0.02712	0.0019	1.1563
Factor8	-0.01321	0.03942	-0.0018	1.1545
Factor9	-0.05263	0.02161	-0.0072	1.1472
Factor10	-0.07424	0.02339	-0.0102	1.1370
Factor11	-0.09763	0.01577	-0.0134	1.1236
Factor12	-0.11340	0.01564	-0.0156	1.1080
Factor13	-0.12904	0.01069	-0.0177	1.0903
Factor14	-0.13973	0.00315	-0.0192	1.0711
Factor15	-0.14288	0.03022	-0.0196	1.0514
Factor16	-0.17310	0.02816	-0.0238	1.0277
Factor17	-0.20126	.	-0.0277	1.0000

```
LR test: independent vs. saturated: chi2(136) = 2.2e+05 Prob>chi2 = 0.0000
```

Figure 4: Unrotated factor analysis on police related items

```
Factor analysis/correlation                    Number of obs     =      31404
    Method: principal factors                  Retained factors  =          4
    Rotation: orthogonal varimax (Kaiser off)  Number of params  =         62
```

Factor	Variance	Difference	Proportion	Cumulative
Factor1	3.03125	0.68643	0.4166	0.4166
Factor2	2.34482	0.76177	0.3222	0.7388
Factor3	1.58306	0.59153	0.2176	0.9564
Factor4	0.99153	.	0.1363	1.0926

```
LR test: independent vs. saturated: chi2(136) = 2.2e+05 Prob>chi2 = 0.0000
```

Figure 5: Rotated factor analysis on police related items

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Factor4	Uniqueness
zplcjbcn	0.5067	0.1775	0.4156	0.2031	0.4978
zplcrgwr	0.6897	0.2005	0.1545	0.0357	0.4590
zgsupplc	0.6920	0.2301	0.2349	0.1250	0.3973
zplcipvl	0.7279	0.2134	0.1836	0.0214	0.3905
zplccbrb	0.4476	0.2203	0.1334	0.3175	0.6325
zplcpvcr	0.3270	0.1659	0.6845	0.1233	0.3818
zplccbrg	0.2510	0.1387	0.6736	0.0755	0.4583
zplcarcr	0.0980	0.0785	0.2242	0.0580	0.9306
zplcrspc	0.5426	0.1917	0.2613	0.3449	0.4816
zplcfrdc	0.5395	0.1925	0.2536	0.3524	0.4834
zplcexdc	0.3744	0.1515	0.2181	0.2635	0.7199
zpolrichpoor	0.2428	0.1229	0.2030	0.4889	0.6457
zpolrace	0.1701	0.0677	0.1898	0.4240	0.7506
zbplcdc	0.1610	0.6814	0.1650	-0.0055	0.4825
zdoplcsy	0.1627	0.8797	0.0773	0.0560	0.1906
zdpcstrb	0.1602	0.8433	0.0716	0.0751	0.2524
zplciplt	0.1372	0.0858	0.1073	0.2599	0.8948

Figure 6: Rotated factor loadings for police related items