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## How Normative Judgments Challenge Social identification To Shape Preferences for Redistribution?<sup>1</sup>

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### Abstract:

This article aims at showing how preferences for redistribution are shaped in France. Through a microeconomic model, we show how preferences on redistribution can be understood as the outcome of “normative rationality” depending on beliefs on the origin of inequality and on public values. This model is then confronted to empirical field data. We use data from a historical context where growth is rather dynamic i.e. likely to attenuate the competition between people. Even in a more dynamic context, our results first illustrate how individuals use normative rationality to justify partisan preferences. Second it reveals that the impact of social class or group belonging feelings on preferences for redistribution is mediated by normative judgments. Finally, it reflects the importance of social identification processes.

**Key words:** *Preferences for redistribution, inequality, beliefs, social identification, economic conditions.*

**JEL code:** D63

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# Introduction

This paper has for main objective to deepen the understanding of the determinants of preferences for redistribution, considering together the role played by the beliefs on the origin of inequality, i.e. concerning luck and effort to get ahead in life and the role played by the public values. Both beliefs and public values form normative judgements. More specifically, public values are viewed as social norms concerning her/his own behaviour towards others. We interpret them here as reflecting one's aversion to inequality. They are integrated by the individual and may challenge beliefs in explaining the individual determinants of preferences for redistribution.

Over last ten years an extensive economic literature shed light on the various factors determining preferences for redistribution. This literature has departed from Meltzer and Richard (1981) seminal median voter model which did not recognize other preferences than self-interested ones. Alesina et al. (2011) have shown how such a model has let places to other important motives which are crucial to explain preferences for redistribution : personal history (Piketty, 1995, Benabou Ok (2001) recession (Giulano, Spimlibergo, 2009, 2014), political context (Alesina Glaeser 2004) or family ties (Alesina Giulano, 2007) for example. Other motives are more or less hidden ones. For example, the parental transmission about the reality of social inequality and about the power of social mobility may be skewed in order to guide the children's responses to incentives (Benabou, Tirole, 2006). In this framework, the cognitive dissonance and the need to believe that people always are ending up getting what they deserve (Lerner, (1980)) matter so that individuals may act through temporal incoherence which explains the different representations of reality concerning income variations. Fairness perceptions are also of great importance as shown by the literature. People seem to make a difference between what is due to luck and what is brought by hard work and their beliefs concerning the role of each of these factors matter (e.g. Piketty, 1995; Fong, 2001, Alesina, La Ferrara, 2002, Alesina, Angeletos 2005 ; see also Boarini, Le Clainche, 2009, Isaksson, Lindskog, 2009, Krawczyk, 2010). The values of reciprocity or of desert per se seem to be of importance as well to explain preferences for redistribution. For example, in a voting framework with imperfect information about the relative combination of skills and effort hold by individuals, Luttens, Valfort (2010) shows that desert-sensitive preferences for redistribution lead to lower levels of redistribution when the median voter has a high taste for work. Their empirical tests emphasize that Americans hold more desert-sensitive preferences for redistribution than Europeans. In a recent paper, Schokkaert and Truyts (2014) model also the way the individual subjective perceptions of the relative importance of the main determinants of income (including talents) influence their preferences for redistribution. Insofar as the individuals are not perfectly informed about luck, effort and ability, they derived information from their reference group. From a simple model of "homophilous group formation", on the basis of talents indicators, they obtain new insights concerning preferences for redistribution.

We may think that the individual beliefs about determinants of success in life may be challenged by public values and that both are partly shaped by individual trajectories and self-interest. In this paper we want to fill the gap that exists in the literature due to the fact that these factors often are examined in separate models.

We then propose to model preferences for redistribution as the results of the maximization of a social welfare function that permits a challenge between beliefs about determinants of success in life, public values and self-interest.

Our contribution is new insofar as we propose an alternative to the mechanisms already studied through which beliefs, about luck and effort to get ahead in life,

determine preferences for redistribution. Conversely to Benabou Tirole (2006), we do not consider that beliefs adjust to the income distribution to lead to self-fulfilling equilibria in a context of perfect or quasi perfect information. Rather, we consider that the perceptions of the individuals are weakly constrained by the observation of income distribution but are sensitive to general economic conditions and to the need for social belonging.

The model we construct is then likely to give a simple analysis of the way normative judgements can be used to justify preferences for redistribution in connection to self-interest. More specifically, the empirical test will help us to understand how social identification process play a major role in mediating normative judgements.

We test our model on data from ISSP 1999-2000 survey in order to check the extent to which these perceived beliefs and public values are determined or not by self-interest but in order to collect evidence concerning their determinants as a whole, as well. We use a homogenous institutional and historical context given by the French case where economic growth was rather dynamic i.e. likely to moderate competition between people. Indeed, it is important that the context does not exacerbate self-interest in order to analyse the underlying mechanisms explaining the formation of preferences for redistribution.

Our results highlight how individuals use normative judgements to justify partisan preferences since these judgments are in part determined by economic variables reflecting self-interest. In addition, a strong effect of social class belonging feelings appear as a mediating effect of public values and beliefs about origin on inequality on preferences on redistribution. Actually, this reflects the importance of social identification processes (Akerlof, Kranton, 2000, Klor, Schayo (2010), Kourtellos, Petrou, 2017, Gallice, 2018).

Our paper is organized as follows: section II presents the theoretical model, Section III presents the data and the estimation strategy we used. The results are presented and discussed in section V, after which we reach the conclusion.

## 2 A simple “normative rationality” model

We follow modelling from Schokkaert (2004) and Jacquet and Van de Gaer (2010) who characterize optimal taxation in an equal opportunity setting. We adapt these models at the individual level, assuming that each individual being subject to an imperative rationality, so called ‘normative rationality’, that acts as a constraint in establishing a coherent relationship between preferences for redistribution (PFR) and the individual’s representation of the origins of inequality combined with public values. This point will be taken up again further. We begin from the idea that each individual adopts the same fundamental explanatory model in the sense that each individual considers income as being the outcome of productivity, or the freedom to choose one’s input level in terms of effort combined with the circumstances to which he or she is confronted. These circumstances should be understood in the broadest sense of the term to include talent, handicap or life’s “accidents”. They are assumed to be beyond the individual’s control (Fleurbaey 1995; Roemer 1993). For practical reasons we adopt a current formalism common to all individuals relative to an income-effort trade off. The informational hypothesis is the following one: each individual perfectly observes the distribution of incomes but only observes personal effort. As we will see below, this framework of incomplete information allows the coexistence of many possible interpretations about the origin of inequality. To elude confusion, we will designate the individuals by  $w$  ( $w=1,...,n$ ) when we describe their rank in the distribution of incomes<sup>2</sup> and by  $i$  ( $i=1,...,n$ ), when we describe their beliefs on the origins of inequality.

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<sup>2</sup> We suppose that the individuals are designated par by growing rank in the distribution of incomes.

### Beliefs on the origins of inequality

The individual  $i$  considers that the pre-tax income  $y_w^i$  of an individual  $w$  is the product of the expected effort  $e_w^i$  and a parameter  $\theta_w^i (>0)$  that she/he assigns to the individual  $w^3$ . This parameter accounts for circumstances encountered, beyond the control of the individual and that we will simply call the return of the effort provided:

$$y_w^i = \theta_w^i e_w^i \quad (1)$$

For each  $i$ , the effort put into acquiring an income is the result of maximizing a utility function composed of disposable income  $z$  and effort  $e$  :

$$U_w^i(z, e) = z - \frac{1}{2}(\beta_w^i \cdot e)^2 \quad (2)$$

$\beta_w^i (>0)$  must be interpreted as a parameter of tastes measuring the disutility of effort assigned to  $w$  by  $i$ . The disposable income is the income after tax defined as an affine function of the pre-tax income:

$$z = ay + \bar{z} \text{ with } 0 < a < 1 \quad (3)$$

Then, according to  $i$ , the effort of  $w$  is written as a taxation function of  $a$  and depends of  $\theta_w^i$  and  $\beta_w^i$  assigned to  $w$  by  $i$  :

$$e_w^i(a) = \frac{a \cdot \theta_w^i}{(\beta_w^i)^2} \quad (4)$$

by deduction, the income  $y_w^i$  expected by  $i$  for  $w$  is also a function of  $a$  and depends of  $\theta_w^i$  and  $\beta_w^i$  assigned to  $w$  by  $i$ :

$$y_w^i(a) = a \cdot \left( \frac{\theta_w^i}{\beta_w^i} \right)^2 \quad (5)$$

The beliefs formed by the individuals on  $\theta_w^i$  and  $\beta_w^i$  are constrained by observable reality, i.e. by hypothesis by the income distribution observed for each level  $a$  of taxation. The beliefs of the individual  $i$  are also weakly constrained by the observation of her own effort level.

We then note  $y_w(a)$  as being the current observable income for the individual  $w$  and  $e_i(a)$  the effort level effectively realized by  $i$  for a taxation  $a$ . It is then possible to designate rational beliefs for  $i$  as being those which permit  $i$  to take into account the distributions of incomes and to take into account personal effort levels for any taxation  $a$  :

**Definition:**  $\theta_w^i$  and  $\beta_w^i$  are rational if for all  $a$  and all  $w$ :  $y_w^i(a) = y_w(a)$  and  $e_i^i(a) = e_i(a)$ .

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<sup>3</sup> To simplify we also suppose that the  $\theta_w^i$  are ranked as for income distribution.

If we make the hypothesis according to which  $y_w^i(a) = y_w(a)$  is realized for all

$k_w = \frac{q_w}{b_w}$  where  $\theta_w$  and  $\beta_w$  are the true parameters, it is easy to demonstrate that a

great number of rational beliefs exist. In fact, we observe from (2) that income distribution, for each  $a$ , is entirely determined by the distribution of the relation

$k_w = \frac{q_w}{b_w}$ . If the observation of personal effort and of income distribution allows

$i$  determining his own parameters  $\theta_i^i = \theta_i$  and  $\beta_i^i = \beta_i$ , an individual's beliefs regarding the distribution of the parameters  $\theta_w^i$  and  $\beta_w^i$  are free. Thus, an individual could consider that the income distribution can be totally explained by the diversity in tastes for effort, the  $\beta_w^i$ , whereas another individual could believe that the diversity of circumstances, the  $\theta_w^i$ , provides the entire explanation.

Of course, the possibility of observing optimal effort distribution would allow undetermined factors to be eliminated. This hypothesis however appears too strong and it is more reasonable to think that each individual's representation of distribution relative to effort (taste for effort) and circumstance or luck is founded on a very partial observation of the reality governing individual behaviour. Our model then take account for the indeterminate nature of the beliefs and the way they are determined. To a certain extent, perceiving PFR as the logical outcome of beliefs on the origins of inequality appears somewhat reductionist and naive. One must keep in mind that the PFR in themselves have 'functions'. They are an ideological resource legitimizing political standpoints and instruments in the socialization of individuals in a given family history or connected to the belonging to a particular social group. 'Normative rationality' simply imposes some coherence between beliefs and PFR. The following section will deal with the formation of PFR and the representations of the origin of beliefs from an empirical point of view.

Prior to that, we must finish illustrating individuals' 'normative rationality' by explaining the relationship between beliefs on the origins of inequality, that is to say, on the distribution of parameters  $\theta_w^i$  and  $\beta_w^i$ , and PFR.

### **Public values and Preference for redistribution**

We suppose that the PFR are the result of the confrontation of public values and beliefs on the origins of inequality. It remains to define individuals' public values.

In the scenario previously outlined, public values are formalized within a defined context of social well-being for a given set of beliefs. We will more specifically assume that social preferences express each individual's aversion to inequality in terms of income distribution, at individual level. They can thus differ in two ways: the way in which individual situations are assessed and the degree of aversion to inequality. We will assume that public values express an individual's aversion to inequality in terms of how income is distributed over individual situations.

We suppose that each one holds the following point of view: individuals have to be compensated for the circumstances beyond their control ( $\theta_w^i$ ) and not for their choice, i.e. within our framework, for their tastes ( $\beta_w^i$ ). We adopt the principle that individual situations are fundamentally assessed in the same manner: individuals assess their fellow citizens situation in terms of opportunity open to them. Within the stylized framework adopted here, the opportunities available to  $w$ , for the viewpoint of  $i$ , are a function of the parameter  $\theta_w^i$  that measures the return on effort. We suppose that these

opportunities are evaluated by  $i$  through the maximum utility that can be achieved by  $w$ . Naturally, each individual can have a diverging opinion on the fairest way of carrying out this instrumental valuation. Individuals who consider effort as low cost will consider that lower productivity is less penalising. We assume that each individual  $i$  uses the following utility function to assess fellow citizens' opportunities: <sup>4</sup>

$$\bar{U}_i(z, e) = z - \frac{1}{2}(\bar{\beta}_i \cdot e)^2 \quad (6)$$

The differences in the valuation of opportunities are thus formalised in the equation as the parameter  $\bar{\beta}_i$  expressing the 'normal' disutility of effort for the individual  $i$ .<sup>5</sup>

Thus,  $i$  values the opportunities of  $w$  by the maximum utility level  $\bar{U}_i$  that  $w$  can achieve given an individual's return  $\theta_w^i$ , that is to say:

$$\bar{U}_i(w) = \frac{1}{2}a^2 \left( \frac{\theta_w^i}{\bar{\beta}_i} \right)^2 + \bar{z} \quad (7)$$

with  $\bar{z} = (1-a)a\bar{k}$  and  $\bar{k} = \frac{1}{n} \sum_{w=1}^n k_w^2$ .

We note that this valuation of the opportunities is an increasing function of  $\theta_w^i$  and a decreasing function of  $\bar{\beta}_i$ .

Keeping in mind that the  $\theta_w^i$  are ranked in ascending order, we consider that the individual  $i$  uses a social welfare function to assess the taxation:

$$W_i(a) = \sum_{w=1}^n \alpha_w^i \bar{U}_i(w) \text{ with } 1 = \sum_{w=1}^n \alpha_w^i \quad (8)$$

where  $\alpha_w^i$  defines the weight attributed by  $i$  to the utility of the individual  $w$  in the social welfare function. The propensity to redistribute resources in favour of the worst off (those who hold resources expected to be low (due to  $\theta_w^i$ )) is as high as the weight which is given to them is high.

Here, a second dimension of public values appears which is directly linked to the redistributive goals of the individuals<sup>6</sup>.

We deduce from the maximisation of the function  $W_i(a)$  the optimal value  $a_i$  for  $i$  of the tax parameter  $a$  <sup>7</sup>:

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<sup>4</sup> A similar way to reason would have been (Fleurbaey 2008) to assume that each agent considers the income distribution for given preferences (a given  $\bar{\beta}_i$ ) to fix an individual's preferred tax rate.

<sup>5</sup> Called "reasonable" preferences in Schokkaert (2004) and "reference" preferences in Jacquet, van de Gaer (2010).

<sup>6</sup> The individuals who affect identical weights  $\alpha_w^i$  to everybody judge that the  $\theta_w^i$  takes into account the individual talents and that income has not to be redistributed. Those who affect high weights to the worst off tend to consider that the  $\theta_w^i$  reflect circumstances which have nothing to do with talents or consider that even the income due to talents has to be redistributed. This latter opinion may be linked to the fundamental aversion to the inequality people may demand in a given society.

<sup>7</sup> For the sake of simplicity, we assume that first order condition is sufficient and that  $a_i$  belongs to  $]0,1[$  for each  $i$ .

$$a_i = \frac{\bar{k}}{2\bar{k} - \frac{1}{\bar{\beta}_i^2} \sum_{w=1}^n \alpha_w^i (\theta_w^i)^2} \quad (9)$$

Without surprise,  $a_i$  diminishes with the disutility of the effort taken as the norm by  $i$ ; in other words, if  $i$  considers the effort to cost little he will be less inclined to support redistributive tax policies. Equally very logically,  $a_i$  diminishes when the weight attributed to poorer individuals, those whose return on the effort is lowest, is high. The differences in preferences for redistribution according to this model have thus two sources, the *public values* - the norm  $\bar{\beta}_i$  and the weighting  $\alpha_w^i$  - and the *beliefs on the origin of inequality* - the distribution of the  $\theta_w^i$ . Concerning this last point, we note that if  $i$  considers that the returns on effort are common to all ( $\theta_w^i = \theta_w^j$  for all  $w$  et  $j$ ) then the weights no longer have any effects since  $i$  considers then that the opportunities are common to all.

The aim of the model presented in this section was to schematically expose the logical constraints imposed by ‘normative rationality’. The empirical validation of the model would imply that the influence of any explanatory variable acts through a normative variable. The estimations ran in the following sections will permit us to check the adequacy of the model to the data.

### 3 Empirical strategy

We here test the ‘normative rationality’ model presented above. It consists in explaining the PFR expressed in survey data by individuals’ public values and beliefs<sup>8</sup>. But it is likely that unobserved variables influence both the PFR and the ‘normative’ variables that can lead to bias the influence of these variables on the PFR. It is why we propose to jointly estimate the PFR, the public values the and beliefs on the origins of inequality. Before that, we present data in the next sub section.

#### 3.1 The data

The data used here are issued from the 1999-2000 ISSP<sup>9</sup> survey for France “Social Inequalities II”. We choose to use this database because to test our model, the economic context at stake, has to be relatively neutral, that means it does not exacerbate selfishness. The survey was conducted in a period where growth was more dynamic in France due to the development of digital economy. Of the 11 000+ postal questionnaires sent, 1889 were returned completed<sup>10</sup>. One must therefore keep in mind that the results presented hereafter are obtained for self-selected individuals and cannot be extended to the French population as a whole without caution<sup>11</sup>.

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<sup>8</sup> When we will refer jointly to public values and beliefs about origin of inequality, we will use the term “normative variables”.

<sup>9</sup> International Social Survey Program; for the questionnaire, see [www.issp.org](http://www.issp.org).

<sup>10</sup> Concerning the frequencies of answers associated to the variables of interest explained below, note that the missing values are not reported. So the total answers to the questions associated to each variable do not systematically reach 1889.

In Appendix *Tables I and II* summarize descriptive statistics of the unweighted data base.

### 3.1.1 The dependant variables

We consider three dependant variables: the PFR naturally but also the “normative” variables accounting for public values and beliefs about the origin of inequalities.

#### *The preferences for redistribution*

The preferences concerning redistribution will be captured by the following question: “In your opinion, should income tax and taxes be higher, the same or lower for people with higher disposable incomes? They should be:

- Much higher (444 ind., 24%)
- Higher (858 ind., 46%)
- The same for everybody (386 ind., 21%)
- Lower (83 ind., 4%)
- Much lower (32 ind., 2%)
- Cannot decide” (50 ind., 3%)

The binary variable **redistribution** takes the value of 1 if the individual replies “much higher” or “higher”<sup>12</sup> and otherwise 0. This question is asked to individuals regarding progressive tax rates and thus has the advantage of correctly apprehending the reality of a redistributive policy.

#### *The public values*

We have to find a question that allows us to measure the more or less redistributive nature of public values animating individuals (for a given representation of the origins of inequality); that, in other words, allows the effects of the parameters  $\bar{\beta}_i$  and  $\alpha_w^i$  to be taken into account in the choice of a more or less redistributive tax system. As this is difficult, we have opted for a question that asks respondents on the importance they attach to need, independently of any reference to the efforts supplied or the circumstances encountered. One could think that, everything being otherwise equal, an individual who attaches a great deal of importance to the meeting of needs is inclined to support a redistributive tax system. The question retained was formulated as follows:

“In your opinion, in deciding what an individual should earn, what importance should each of the following factors be given?

(Several items (responsibility, education...) including:)

Factors necessary to keep a family alive:

- It is essential (501 ind., 27%)
- It is very important (530 ind., 29%)
- It is fairly important (546 ind., 30%)
- It is not very important (126 ind., 7%)
- It has no importance whatsoever (104 ind., 5%)
- Cannot decide’ (37 ind., 2%)

The binary variable **need** will take the value of 1 if the individual answers “It is essential” or “It is very important”<sup>13</sup> and otherwise 0.<sup>14</sup> The individuals who attach a great deal of importance to the satisfaction of needs forge their preferences for redistribution on a largely egalitarian principle: in reference to the model, they will attach a great deal of weight to the pure redistributive term  $\bar{z}$  of the normal utility  $\bar{U}_i$ . A priori, they are opposed to those who would tend to privilege rewarding effort (which would give a higher weighting to the revenue of effort in  $\bar{U}_i$ ) or talent (who

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<sup>12</sup> 36 missing values.

<sup>13</sup> 45 missing values.

<sup>14</sup> Any other grouping of items (“essential” alone and “fairly important” with “very important” for instance) leads to less convincing results (weaker correlation between dependant and independent variables).

would opt for a less egalitarian principle than that of maximising all the opportunities of the less well-off).

### *Beliefs on the origins of inequality*

To apprehend the ‘beliefs regarding effort’, i.e. the beliefs on the origins of inequality, we use the question that asks individuals on whether, according to them, the French are justly rewarded for their efforts:

“In France, people are rewarded for their efforts:

- Strongly agree (44 ind., 2%)
- Agree (386 ind., 21%)
- Neither agree nor disagree (522 ind., 28%)
- Somewhat disagree (723 ind., 39%)
- Totally disagree (186 ind., 10%)
- Cannot decide” (11 ind.)

The binary variable *effort* is equal to 1 if the individual replies “Totally agree”, “agree” or “neither agree nor disagree”. We consider that the individuals for whom the variable *effort* takes the value 1 will less willingly defend a progressive tax system than the others.

Individual’s social mobility and social class constitute the set of explanatory variables whereas age, gender, household size, income, educational level, professional status, home owner status, are control.

### *3.1.2 The independent variables*

To introduce variables explaining normative variables we have constructed variables characterizing individuals’ social mobility and two variables of subjective feelings of class and religion belonging.<sup>15</sup>

#### *Social mobility*

The aim of this variable is to measure the respondent’s social mobility in relation to the father’s social status. The following question was used:

“Now please think about your current or last employment. If you compare this employment to the one your father had when you were 15, would you say that the level or status of your employment was:

- Much higher than your father’s 1 (323 ind., 17%)
- Higher 2 (673 ind., 36%)
- Approximately identical 3 (383 ind., 20%)
- Lower 4 (248 ind., 13%)
- Much lower than your father’s 5 (109 ind., 6%)
- Has never been employed or cannot compare (father deceased or father has never been employed and no answer etc.) 0 (153 ind., 8%)”

As we observed a roughly linear impact of these items on the dependant variables we choose to set up a quantitative variable from this question. The variable *social mobility* is a variable that takes the value 0 for the individuals classed in the items 3, the value –2 for item 5, -1 for item 4, 1 for item 2 and 2 for item 1. This variable thus measures respondent individuals’ social mobility. So as not to lose too many observations, the value 0 is attributed to individuals classed in the item 0 assuming that we do not make systematic errors in this way.

#### *Upward mobility*

We also deemed it useful to construct a variable accounting for the individual’s recent mobility. The following questions helped us achieve this:

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<sup>15</sup> Definitions of the other independent variables are given in Appendix

“In our society there are groups that are situated at the top end of the scale, and others that are situated towards the bottom end of the scale. Here is a scale that goes from top to bottom. Where would you situate yourself on this scale from 1 to 10, 1 being top?

And ten years ago, where would you have classed yourself (from 1, to 10 1, being top)?

The **upward** variable is a quantitative variable defined by the difference between the figure corresponding to the reply to the first question and that corresponding to the second question (“ten years ago”). The higher the variable, the higher the mobility: it takes the following values –3 and less<sup>16</sup>, -2, -1, 0, 1, 2 and 3 and over.

We equally constructed two ‘belonging’ variables: belonging to a social class and religion.

#### *Social class*

This variable is built-up from the following question:

“Certain individuals consider themselves as belonging to a social class. In which class would you position yourself?

- |                             |              |
|-----------------------------|--------------|
| - Lower class, the excluded | 1 (11 ind.)  |
| - the working class         | 2 (215 ind.) |
| - upper working-class       | 3 (153 ind.) |
| - middle class              | 4 (930 ind.) |
| - upper middle-class        | 5 (350 ind.) |
| - upper class               | 6 (43 ind.)  |
| - do not belong to a class  | 7 (163 ind.) |

Items 1, 2 and 3 were grouped together as were items 5 and 6. Finally, we get 4 classes: working class <sup>17</sup>, middle class, upper class and classless.

#### *Religion*

The **religion** variable takes the value of 1 if the answer to the following question was “yes”, otherwise 0.

“Do you consider yourself as belonging to a religion?

- Yes (65% of the respondents<sup>18</sup>)
- No ( 35% of the respondents)

### **3.2 Descriptive statistics<sup>19</sup>**

We can particularly look at the correlations between social or upward mobility and support to redistribution as well as between the feelings of belonging (to a religion or to a social class) and support to redistribution.

When we cross the support to redistribution<sup>20</sup> with the beliefs according to which the effort is rewarded in France, we do not obtain any evidence concerning a link between the propensity to be against redistribution when people believe that effort is rewarded

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<sup>16</sup> 93 missing values.

<sup>17</sup> 24 missing values.

<sup>18</sup> 33 missing values.

<sup>19</sup> In Appendix **Tables I and II** summarize descriptive statistics of the unweighted database.

<sup>20</sup> Crossed tables which are commented in this sub-section are not reported.

in France<sup>21</sup>. Otherwise, there is a link, although slight, between the fact of agreeing with the determination of an individual's earnings in accordance with meeting the needs of that individual's family and the increase of redistribution.

In other respects, we observe a mitigated link between the belonging to a religion and the preferences for redistribution: those who consider that they do not belong to a religion, however, are more in favour of redistribution than those who hold the opposite view, undoubtedly because the latter believe more in charity than the former.

The clearest link which is obtained is between feelings of belonging to a social class and preferences for redistribution on the one hand and the normative variables on the other hand. Concerning the link with preferences for redistribution, we note that those who say they belong to the lower class or to the middle class (the most numerous one) particularly consider that redistribution through taxation is legitimate. Concerning the normative variables, we do not observe a significant link between the feelings of belonging to a social class and the opinion according to which the effort is rewarded. Conversely, a slight link is obtained concerning the feelings of belonging to a social class and the opinion according to which the earnings of an individual have to include satisfying the needs of the family. Those who consider that they belong to the lower class, as well as those who consider they do not belong to any particular class, have a higher propensity to agree with the fact that meeting needs should be a determinant of earnings than those who declare belonging to the other social classes.

Lastly the belief in effort, although not linked to preferences for redistribution, appears to be weakly dependent of the opinions concerning social or upward mobility: those who have experienced social mobility less often agree with the fact that effort is rewarded in France. The explanation of this result has to be connected to the historical period at stake. The social mobility question implies to refer to a past period of time. Depending of the age of respondents, such a reference period can be those of the so-called period of "thirty glorious". This result has then to be connected to the social evolutions in favour of education improvement. Concerning the link between beliefs in effort and upward mobility, it means that those who say they experienced a backward mobility are less numerous to think that effort is rewarded than the others. To conclude, the link between preferences for redistribution and normative variables is not straightforward. In what follows, the estimations will allow us to clarify these links.

### 3.3 The estimated model

Beyond descriptive statistics, the estimated model must explain the link between preferences for redistribution on the one hand, and public values and beliefs on effort on the other hand. We thus expect that an individual defending a highly egalitarian principle (like the satisfaction of needs) would generally tend to be in favour of redistributive policies whereas an individual who thinks that the poor are also the ones who make less effort would more rarely tend to be. The basic rationality of the model presented above assumes that preferences concerning redistribution can be explained by normative variables; nevertheless, from an empirical point of view, we cannot exclude that these preferences may also be directly correlated to individuals' economic interests or other socio-economic factors.

Furthermore, we would simultaneously like to explain the public values and beliefs on effort so as to measure the weight of economic interests and other economic and social determinants. The normative rationality model must therefore permit us to define

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<sup>21</sup> The khi2 test rejects the hypothesis according to which there is a dependence between the two variables. In what follows, we only comment the crossing between variables for which the khi 2 tests do not reject the hypothesis of dependence between the variables. We note that the variable reflecting upward mobility in particular is not linked to preferences for redistribution however there is a link between upward mobility and the belief in effort.

whether normative judgements are used to hidden self-interest or if they are more largely determined by social class or individual and family experiences.

The underlying model is thus a simultaneous equation model that explains at the same time the preferences for redistribution, public values and beliefs on the origins of inequality based on the hypothesis that the first will be explained by the two others and not the other way round.

On this hypothesis, the model will be more precisely written as follows:

$$(eq.1): y_1^* = a_1 + \beta.y_2 + \alpha.y_3 + \gamma_1.X_1 + \varepsilon_1 \quad \text{avec } y_1 = 1 \text{ if } y_1^* > 0 \text{ and otherwise } 0$$

$$(eq.2): y_2^* = a_2 + \gamma_2.X_2 + \varepsilon_2 \quad \text{avec } y_2 = 1 \text{ if } y_2^* > 0 \text{ and otherwise } 0$$

$$(eq.3): y_3^* = a_3 + \gamma_3.X_3 + \varepsilon_3 \quad \text{avec } y_3 = 1 \text{ if } y_3^* > 0 \text{ and otherwise } 0$$

with  $E[\varepsilon_i] = 0$  and  $Cov[\varepsilon_i, \varepsilon_j] = rho_{ij}$ .

$y_1$  represents the **redistribution** variable,  $y_2$  the **effort** variable and  $y_3$  the **need** variable;  $X_i$  defines the independent variables axis and  $g_i$  the parameters axis. The model is estimated by the maximisation of the simulated probability assuming a normal residual<sup>22</sup>.

The estimation involves the parameters  $a$ ,  $b$  and  $g_i$  and also the covariates  $rho_{ij}$  of the residuals. This simultaneous estimation aims at dealing with the question of the endogenous nature of dependent variables in the equation explaining the redistribution variable (eq. 1), in other words, the endogenous nature of variables  $y_2$  and  $y_3$ .

### 3.4 Estimations and results

We begin by presenting the different estimations effectuated and follow with a step by step discussion of the results.

#### 3.4.1 The different estimations

In order to measure the biases generated by the supposedly endogenous nature of the normative variables ( $y_2$  and  $y_3$ ), we estimated the equations 1, 2 and 3 separately (thus supposing that  $rho_{ij}=0$ ) and simultaneously. In addition, equation 1 was estimated on its own excluding the normative variables (public values and beliefs on effort) so as to judge the pertinence of explaining the preferences for redistribution by the same variables.

Finally, three types of estimation were effectuated:<sup>23</sup>

- separated estimations ( $rho_{ij}=0$ )
- a global estimation of the simultaneous equations model (estimation of the  $rho_{ij}$ ) :
- an estimation of the preferences for redistribution excluding the normative variables : public values and beliefs on effort (equation 1 without  $y_2$  and  $y_3$ )

For the choice of independent variables (the  $X_i$ ), we retained the significant variables (at the 10% threshold at least) in the separated estimations. Only the socio-demographic variables (age<sup>24</sup>, gender, religious belonging) were systematically kept in the estimations. We also add the size of the *household* variable jointly with *household income* variables in order to capture standard of living effect. It is important

<sup>22</sup> The estimation is effectuated by the Stata software mvprobit procedure that uses the GHK (Geweke-Hajivassiliou-Keane) probability simulator; see Green (2003).

<sup>23</sup> Observations with missing data have been removed from the estimations.

<sup>24</sup> Age was nevertheless removed from the estimation from the *need* variable equation (eq. 3) since it severely undermined the significance of the coefficient of the variable *retired*.

to note that too many missing values do not allow us to use a more comprehensive measure of the family structure. Only the *single living* variable has been introduced when its effect is significant.

### 3.4.2 Identification strategy:

The recursive shape of the simultaneous equations model implies identification issues knowing that each dependant variable of equation (2) and (3) are also control variables of equation (1). In order to allow strong identification, exclusive variables in equations (2) and (3) are needed.

Even if, from our theoretical point of view, impact of independent variables on PFR should act through “normative” variables, we could not exclude the direct influence of each dependant variable on PFR (at least for the reason that we imperfectly observe beliefs and values). So we adopt an empirical process consisting in excluding variables which do not significantly influence PFR in the separated estimations.

“Personal income” does not appear to be significant in PFR equation in separated estimations (eq. 1 *table IV*) as in simultaneous estimations (eq. 1 *table III*). On the contrary, “personal income” determines beliefs on the role of effort: in the simultaneous estimations (eq. 2, table XI), people with high personal income (more than 20 000 F)<sup>25</sup> are more likely to believe in effort which is in accordance with a *pharisian* normative rationality. Hence, we use “personal income” to strongly identify the effect of “belief on effort” on PFR. Furthermore, we note that “social classes” do not influence PFR in separated estimations even though social class belonging is significantly correlated with “effort” and “need” in an expected way: respective to upper class, people declaring to belong to lower classes are less likely to believe in effort and more likely to give importance to satisfaction of need. Exclusion of “social classes” variables in equation 1 of simultaneous estimations allows us to strongly identify the role of “need” on PFR.

### 3.4.3 Comparison of results obtained in the different estimations

Following the previous theoretical analysis, we here present the results of three estimations (*tables III, IV*) which permit to indicate the extent to which 1/ the normative variables have a causal impact on the preferences for redistribution and 2/ the normative variables mask a part of self-interested objectives of the individuals. The comparison between the simultaneous estimation and the separated estimations permit us to answer the first question and to note the existence (if any) of unobserved factors which can bias the value of the coefficients relative to normative variables in the separated estimations.

The simultaneous estimations of preferences for redistribution and normative judgments also permit to identify variables (reflecting, for some of them, self interest) for which the influence on the preferences for redistribution is not direct but occurs through the normative judgments. Finally, a comparison of the results of the simultaneous estimation and of the direct estimation (which does not include normative variables) of the preferences for the redistribution reveal how the inclusion of the normative rationality in the model permit to precise the understanding of the formation process of preferences for redistribution. As a matter of fact, the simultaneous estimations underline the influence of explanatory variables the effect of which is masked in the direct estimations.

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<sup>25</sup> The significant and positive impact of “no income” item on the role of effort is not easy to interpret knowing that one finds a majority of full time employed persons among people who choose this item. A way to understand this result is to see “no income” response as an “active” way to respond which is highly correlated with belief on the role of effort.

*Separate estimations and simultaneous estimations:*

The results of these estimations are presented in **tables III** and **IV**. In the simultaneous estimation, the ‘normative variables’ are significant with the expected result. the more importance an individual affects to the satisfaction of needs, the greater the likelihood of being favourable to redistributive policies. The more an individual agrees with the statement that the French are rewarded for their efforts, the less likely she is to be favourable. It should be noted that the value of the coefficient attached to the variable *need* is four times lower in the separated estimations than in the simultaneous estimation.

It should also be noted that in the separate estimation of the *effort* equation (eq. 2 in **table IV**), the sign of the coefficient is reversed which underlines the importance of taking endogenous bias into account if one does not want to make a serious error in the interpretation and on the reality of a normative rationality.

*Direct estimation (without normative variables) and simultaneous estimations:*

We note that the *upward mobility* variable appears as non-significant in the estimation without normative variables whereas it is significant in the simultaneous estimation (see **table V**). This shows that the normative rationality model that we propose allows us to reveal the relevance of certain variables concerning individual paths whereas this influence is masked by a direct estimation of preferences for redistribution. Conversely, it is worth noting that *education*, *home ownership status*, *gender* and *public sector employment* variables are not significant in the simultaneous estimations. This is in line with the theoretical model which conjectures that PFR can be explained solely by normative variables.

*The influence of socio-economic variables in the simultaneous estimation (table III)*

We note that the traditional economic variables have an expected influence on the ‘normative variables’ and especially on the *need* variable for which income clearly plays a decreasing role: the higher the household income, the less likely need is deemed an essential factor in deciding what an individual should earn. For the effort variable, individuals with the highest incomes believe more in effort than those with mid-range incomes. Knowing that the need variable has a positive influence on PFR and conversely for the *effort* variable, one can thus conclude, in a certain manner, that normative values hide objective interests.

The direct effect of income (household income) on preferences for redistribution (eq. 1) is not monotonous since, in relation to the 15000-20000 euros income bracket, the individuals situated in the lower income brackets are less likely to be in favour of a redistributive tax system in the same way as individuals in the higher income brackets. This result suggests that the model exaggerates the effect of the need variable on the PFR for the individual situated in the lower income brackets. In other words, it reveals that the normative variables used in the estimations are not sufficiently judicious to remove the direct influence of income on PFR. Nevertheless, the ambiguous effect of income on PFR is not necessary an unexpected result on French data<sup>26</sup>.

Without surprise, we observe that the freelance workers are more frequently unfavourable to a redistributive tax system but that curiously, they ‘do not believe in effort’ any more than private sector employees. This result is no doubt related to the previously mentioned ambiguity of the *effort* variable. In parallel, the public sector employees more frequently consider need as an important remuneration criterion which makes them indirectly more favourable to a redistributive tax system than private sector employees.

The effect of status regarding property ownership on the preferences for redistribution is indirect and for the multiple property owners only; it is related to the “belief in effort”. Here again, objective interest is covered by normative justifications.

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<sup>26</sup> See Boarini, Le Clainche (2009) who underline the ambiguous effect of incomes.

We equally note with surprise that educational level has little influence other than the more highly qualified individuals' effect on "belief in effort". Finally, age and gender have little significant effect other than women more frequently consider need as an important criterion than men. This is in conformity with the results of the literature (Miller 1992).

#### *The individual path and belonging variables*

Social class appears as far more relevant in our estimations than the socio-professional variables that we relegated to control variables. This influence is not direct as it is working through normative variables, but it is nonetheless real. The effects of this 'belonging' variable are far less ambiguous than the income effects: the working and middle classes more frequently consider need as being an important criterion than the upper class, and the working class 'believes less in effort' than the upper class. A good knowledge of these feelings of belonging also means a better knowledge of the preferences for redistribution.

At this stage, it should be noted that the variables characterising respondents' parents never appear as significant; their influence is entirely captured by the other explanatory variables and more particularly, belonging to a social class.

Belonging to a religion has an indisputable effect on preferences for redistribution and fairly surprisingly, no effect on normative variables. This absence of effect may be explained in the French case by the importance of catholicism. Catholicism is not either a religion which insists directly on needs. The needs satisfaction may rather be an individual charitable act towards poor people. The "need question" in the survey may then be interpreted in a particular manner by the catholic believers. Another explanation may also be that mentioned by Dejeiha et al. (2007) according to which the religious individuals consider that their faith is a kind of psychological insurance that may be opposed to state public insurance. It is likely that believers more frequently disagree with State intervention in the form of redistribution via the tax system and prefer a 'spontaneous' redistribution. In all cases, belonging to a religion is clearly a reliable 'defiance' marker regarding a progressive fiscal system which is also clearly defiance vis-à-vis the government<sup>27</sup>.

The direct influence of social mobility on PFR is positive: the probability for an individual to be in favour of a redistributive policy is higher if they have benefitted from ascending social mobility. Nevertheless the global effect is ambiguous since its indirect effect through belief on effort is negative: as we can expect it, ascending social mobility favours belief in effort<sup>28</sup>. The effect of *upward mobility* is also ambiguous. It has a negative influence on the beliefs in the role of effort<sup>29</sup> and then *in fine* a positive influence on preferences for redistribution. Its direct effect is, however, negative in opposition with the direct effect of social mobility. Such a result could be connected to an extended interpretation of Benabou and Ok (2001) *Poum hypothesis*. Another explanation may also be connected to Corneo and Grüner (2002) analysis concerning the different determinants of preferences for redistribution, and especially connected to what they call *social rivalry effect* (SRE).

Indeed, we can interpret the result we obtained as generally reflecting the frustration of the individuals who, having recently benefitted from an improvement in their situation, do not want see their well-being diminished by increased tax levels. Whatever the case may be, the career path and belonging variables undeniably play an important role in explaining preferences for redistribution which supports the idea of

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<sup>27</sup>For other discussions of the role of religion concerning preferences for redistribution, see Scheve and Stavage (2006). See also Guillaud (2013).

<sup>28</sup> In comparisons with results of section 3.2 (descriptive data) the link between belief in effort and social mobility is reversed. It underlines the importance of controlling by socio-economic variables.

<sup>29</sup> In comparisons with results of section 3.2 (descriptive data) the link between belief in effort and upward mobility is also reversed.

carrying out research in greater depth in order to better understand normative judgements. Although social class belonging goes beyond a particular social identification process to a group, we can consider such a belonging as a general social identification process that particularly matters for understanding preferences for redistribution.

## CONCLUSION

The model presented in section 2 adopts as a starting point the idea according to which the preferences for redistribution are the expression of a ‘normative rationality’ based on the principle of equalization of opportunities. But the preferences for redistribution diverge for two reasons: the dispersion of beliefs on the origins of inequality on one hand and of public values as resulting from more general aversion to inequality on the other hand. To validate our analysis we choose to test it using data from a period of time where the economy was rather dynamic so, the temptation of selfishness is moderate. The estimations ran in section 3 validate our model since the normative rationality contributes to explain the preferences for redistribution. These estimations also show that it is necessary to simultaneously explain the formation of preferences for redistribution and the normative rationality to avoid confounding factors biasing the estimations.

These normative rationalities illustrate how individuals use acceptable motives to justify partisan preferences: indeed these judgments are in part determined by economic variables reflecting self-interest. At the same time, such judgments are also partly explained by individual’s social mobility and social class belonging and more generally by social identification processes.

These results militate for further examination of the normative foundations of preferences on redistribution in different economic contexts.

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# Appendix

**Table I: Descriptive statistics: “normative”, social mobility and belonging variables**

N=1889	<i>frequency</i>	<i>percentage</i>
Redistribution (36 missing values) =		
1 (In favour of a progressive income tax)	1302	70%
0 (Not in favour of a progressive income tax)	551	30%
Effort (17 missing values) =		
1 (not disagree that people are rewarded for their efforts)	963	51%
0 (disagree that people are rewarded for their efforts or cannot decide)	909	49%
Need (45 missing values) =		
1 (keep a family alive is essential or very important)	1031	56%
0 (keep a family alive is fairly important, not very or not important)	813	44%
Social mobility :		
-2 (employ. stauts much lower than father's one)	109	6%
-1 (employ. stauts lower than father's one)	248	13%
0 (employ. stauts identical than father's one or “cannot compare”)	536	28%
1 (employ. stauts higher than father's one)	673	36%
2 (employ. stauts much higher than father's one)	323	17%
Upward mobility (over 10 years on 10 steps society scale, 93 missing values) :		
-3 (difference of scale levels equals -3 or lower )	109	6%
-2 (difference of scale levels equals -2)	202	11%
-1 (difference of scale levels equal -1)	393	22%
0 (difference of scale levels equals 0)	662	37%
1 (difference of scale levels equals 1)	234	13%
2(difference of scale levels equals 2)	136	8%
3 (difference of scale levels equals 3 or higher)	60	3%
Social class belonging (24 missing values) :		
Working class (Lower class and upper working class included)	379	20%
Middle class	930	50%
Upper class (upper middle class included)	393	21%
Classless	163	9%
Religion (33 missing values) :		
1 (Belonging to a religion)	1206	65%
0 (Not belonging to a religion)	650	35%

**Table II: Descriptive statistics: socio-demographic variables**

N=1889	<i>frequency</i>	<i>percentage</i>
Age :		
<u>18-25 ans</u>	103	5%
<u>26-35 ans</u>	273	15%
<u>36-45 ans</u>	464	25%
<u>46-55 ans</u>	427	22%
<u>56-65 ans</u>	328	17%
<u>66-75 ans</u>	218	12%
<u>76 ans ou +</u>	76	4%
Gender :		
Female	785	42%
Male	1104	58%
Home ownership (19 missing values) :		
Non home owner	413	22%
Single-owner	1041	56%
Multi-owner	416	22%
Employment sector (actual work or last work):		
Freelance	156	8%
Private.Sector employment.	825	43%
Public.Sector employment.	728	39%
Never employed	180	10%
Education (10 missing values) :		
Primary educ.	165	9%
Secondary. without bac	578	31%
Secondary. bac	240	13%
1 <sup>st</sup> cycle univ.	310	16%
2 <sup>nd</sup> cycle univ.	586	31%
Employment status :		
Employed	1136	60%
Unemployed	114	6%
Retired	509	27%
Other inactives	130	7%
Size of household (50 missing values) :		
1 person	249	14%
2 persons	643	35%
3 persons	332	18%
4 persons	385	21%
5 persons	178	9%
6 persons or more	52	3%
Household income :		
- than 10 000 F.	252	13%
10 000 to 15 000 F	381	20%
15 000 to 20 000F.	356	19%
20 000 to 30 000F.	503	27%
+ than 30 000 F.	228	12%
Not revealed	169	9%
Personal income :		
- than 5000 F.	162	8%
5000 to 10 000 F.	527	28%
10 000 to 20 000F.	703	37%
+ 30 000	202	11%
No income	90	5%
Not revealed	205	11%

**Table III : Simultaneous estimation**

N=1661	<i>Redistribution (eq. 1)</i>		<i>Effort (eq. 2)</i>		<i>Need (eq. 3)</i>	
	Coefficient	Standard deviation	Coefficient	Standard deviation	Coefficient	Standard deviation
Effort	-0,79**	0,40				
Need	0,98**	0,43				
Age	0,002	0,003	0,003*	0,003		
Male	-0,001	0,070	0,13*	0,07	-0,15**	0,07
Religion	-0,21**	0,07	0,06	0,07	0,04	0,07
Non home owner	-0,10	0,08	-0,01	0,09		
Single-owner	Ref	Ref	Ref	Ref		
Multi-owner	-0,10	0,09	0,16**	0,08		
Freelance	-0,25**	0,11			-0,05	0,12
Priv.Sect empl.	Ref	Ref			Ref	Ref
Pub.Sect.empl.	0,09	0,07			0,16**	0,07
Never empl.	0,01	0,11			0,17	0,12
Primary educ.	0,01	0,14	-0,10	0,15		
Second. without bac	-0,10	0,10	0,01	0,11		
Secondary. bac	Ref	Ref	Ref	Ref		
1 <sup>st</sup> cycle univ.	-0,17	0,12	0,16	0,12		
2 <sup>nd</sup> cycle univ.	-0,10	0,12	0,23**	0,11		
Unemployed			-0,33**	0,14		
Retired	-0,32**	0,11			0,21**	0,08
Soc. Mobility	0,09**	0,03	0,06**	0,03		
Upward mob.	-0,05**	0,03	-0,09**	0,03		
Working class			-0,30**	0,11	0,28**	0,11
Middle class			-0,09	0,09	0,21**	0,09
Upper class			Ref	ref	Ref	Ref
Classless			0,02	0,13	0,31**	0,13
Size of household	0,004	0,03			0,03	0,03
Single living			0,24**	0,09		
<i>Hhold income :</i>						
- than 10 000 F.	-0,28**	0,13			0,38**	0,12
10 000 to 15 000 F.	-0,23**	0,10			0,22**	0,10
15 000 to 20 000F.	Ref	Ref			Ref	Ref
20 000 to 30 000F.	-0,22**	0,10			-0,07	0,09
+ than 30 000 F.	-0,56**	0,16			-0,26**	0,13
Not revealed	-0,10	0,14			0,17	0,14
<i>Personal income :</i>						
- than 5000 F.			-0,03	0,13		
5000 to 10 000 F.			- 0,02	0,08		
10 000 to 20 000F.			Ref	Ref		
+ 20 000			0,27**	0,11		
No income			0,39**	0,16		
Not revealed			0,10	0,11		
Constant	0,72*	0,39	-0,37*	0,19	-0,27*	0,15
Rho21	0,59**	0,25				
Rho31	-0,51*	0,27				
Rho32	-0,03	0,04				
Log likelihood	-3099					

\*: significant at the 10% threshold; \*\*:significant at the 5% threshold

**Table IV: Separated estimations**

	Redistribution (eq.1) n=1673		Effort (eq. 2) n=1687		Need (eq. 3) n=1755	
	Coefficient	Standard deviation	Coefficient	Standard deviation	Coefficient	Standard deviation
Effort	0,17**	0,07				
Need	0,23**	0,07				
Age	0,001	0,004	0,005	0,003		
Male	-0,11	0,07	0,14*	0,07	-0,14**	0,06
Religion	-0,29**	0,07	0,06	0,07	0,04	0,06
Non home owner	-0,11	0,09	-0,03	0,09		
Single-owner	Ref	Ref	Ref	Ref		
Multi-owner	-0,22**	0,09	0,17*	0,08		
Freelance	-0,35**	0,12			-0,003	0,12
Priv.Sect empl.	Ref	Ref			Ref	Ref
Pub.Sect.empl.	0,19**	0,08			0,19**	0,07
Never empl.	0,04	0,13			0,19*	0,11
Primary Educ.	0,10	0,16	-0,07	0,15		
Secondary. w/out bac	-0,11	0,12	0,03	0,10		
Secondary + bac	Ref	Ref	Ref	Ref		
1 <sup>st</sup> cycle univ.	-0,30**	0,13	0,18	0,12		
2 <sup>nd</sup> cycle univ.	-0,32**	0,12	0,25**	0,11		
Unemployed			-0,33**	0,14		
Retired	-0,34**	0,12			0,21**	0,08
Social Mob.	0,08 **	0,03	0,07**	0,03		
Upward Mob.	-0,03	0,03	-0,09**	0,03		
Working class			-0,34**	0,12	0,32**	0,11
Middle class			-0,12	0,09	0,23**	0,09
Upper class			Ref	ref	Ref	Ref
Classless			0,07	0,13	0,40**	0,13
Size of household	0,03	0,03			0,03	0,03
Single living			0,37**	0,11		
<i>Household income</i>						
- than 10 000 F.	-0,19	0,11			0,36**	0,12
10 000 to 15 000 F.	-0,20*	0,11			0,21**	0,10
15 000 to 20 000 F.	Ref	Ref			Ref	Ref
d20 000 to 30 000 F.	-0,35**	0,11			-0,05	0,09
+ than 30 000 F.	-0,91**	0,13			-0,22*	0,12
Not revealed	-0,19	0,13			0,18	0,14
<i>Personal income</i>						
- than 5000 F.			-0,04	0,13		
5000 to 10 000 F.			- 0,003	0,09		
10 000 to 20 000 F.			Ref	Ref		
+ than 20 000			0,20	0,12		
Without income			0,43**	0,16		
Not revealed			0,12	0,12		
Constant	0,98**	0,26	-0,66**	0,26	-0,33**	0,14
Pseudo R <sup>2</sup>	0,091		0,057		0,038	

\*: significant at the 10% threshold; \*\*:significant at the 5% threshold

**Table V: Direct estimation**

N=1678	Redistribution (eq.1)	
	Coefficient	Standard deviation
Effort		
Need		
Age	0,002	0,004
Male	-0,12*	0,07
Religion	-0,27**	0,07
Non home owner	-0,0	0,09
Single-owner	Ref	Ref
Multi-owner	-0,20**	0,09
Freelance	-0,36**	0,12
Priv.Sect empl.	Ref	Ref
Pub.Sect.empl.	0,18**	0,08
Never empl.	0,07	0,13
Primary Educ.	0,08	0,16
Secondary. w/out bac	-0,14	0,12
Secondary + bac	Ref	Ref
1 <sup>st</sup> cycle univ.	-0,28**	0,13
2 <sup>nd</sup> cycle univ.	-0,26**	0,12
Unemployed		
Retired	-0,31**	0,12
Social Mob.	0,08**	0,03
Upward Mob.	-0,03	0,03
Working class	0,26**	0,13
Middle class	0,13	0,10
Upper class	Ref	Ref
Classless	-0,02	0,14
Size of household	0,03	0,03
Household income		
- than 10 000 F.	-0,16	0,13
10 000 to 15 000 F.	-0,18	0,11
15 000 to 20 000 F.	Ref	Ref
20 000 to 30 000 F.	-0,29**	0,11
+ than 30 000 F.	-0,82**	0,14
Not revealed	-0,07	0,16
Personal income		
- than 5000 F.		
5000 to 10 000 F.		
10 000 to 20 000 F.		
+ than 20 000		
Without income		
Not revealed		
Constant	0,95**	0,27
Pseudo R <sup>2</sup>	0,085	

\*: significant at the 10% threshold; \*\*: significant at the 5% threshold